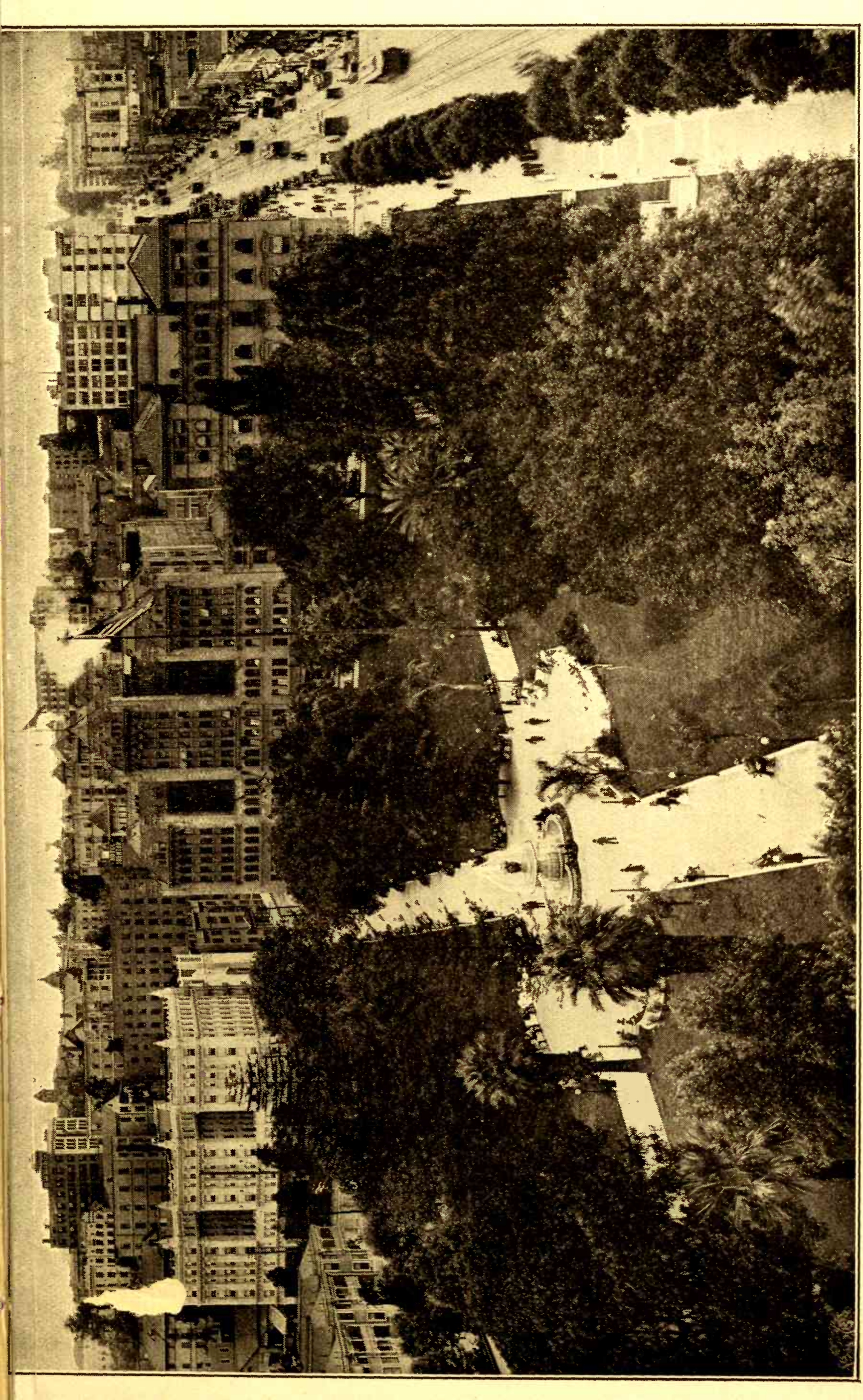
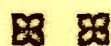


COMMERCIAL GEOGRAPHY
OF
SOUTHERN CALIFORNIA
WITH
MAPS AND ILLUSTRATIONS

F. ROLFE



Commercial Geography of Southern California



I. PHYSICAL CHARACTERISTICS

Area, 70,000 sq. mi.* Population, 1910, 848,000. Density, 12

Southern California has usually been considered as made up of the counties of Santa Barbara, Ventura, Los Angeles, Orange, San Diego, San Bernardino, Riverside and Imperial—the “South of the Tehachapi counties.” For the broader purposes of this Handbook, however, that portion of California is included which will, because of natural conditions and transportation facilities, make use of the cities of Los Angeles and San Diego as commercial centers and of the ports of Los Angeles and San Diego as shipping points. This adds the counties of Inyo, Kern, and the southern portions of Kings and Tulare to Southern California territory.

Included under this classification are four drainage areas—the Coast Region, the Lower San Joaquin Valley, the Great Basin and the Colorado River Valley.

COAST DRAINAGE REGION

Area 14,000 sq. mi. Population 735,000. Density, 54.

The Coast Drainage Region is that narrow section of Southern California, lying between the mountains and the sea, with all its streams flowing into the Pacific ocean. It extends along the coast from the north line of Santa Barbara county to the Mexican boundary.

Broken in surface by many ranges of rolling hills and steeply sloping mountains, by a number of streams with open valleys, by bowl-like interior valleys, mesa benches, and many beautiful canyons, the 9,000,000 acres of this

*Includes all of Kings and Tulare counties; that portion of San Luis Obispo in Santa Maria Valley Drainage Basin and of Mono County in Owens River Drainage Basin.

section includes 2,000,000 acres classified as agricultural land, 1,000,000 of which is susceptible to irrigation. With a climate that is tempered by the ocean breezes and by sheltering mountains; with a soil that responds most generously to sunshine, cultivation and water, the tillable area of this region is capable of supporting a very dense population. At the same time, the diversified character of the surface will always leave a large portion of it in the wild state, to be used as a playground and to keep the charm of variety which is one of the chief attractions of Southern California.

TOPOGRAPHY—The Coast Drainage Region is divided topographically into three sections, Santa Barbara and Ventura Counties; San Diego County and the Coastal Plain and San Bernardino Valley regions.

1. SANTA BARBARA AND VENTURA COUNTIES—This region is generally mountainous, a large portion of Santa Barbara County being occupied by a section of the Coast Range locally known as the San Rafael Mountains, while a lower range, the Santa Ynez, parallels the southern coast. The coast line of this county is characterized by an abrupt change from a north and south direction to an east and west line, the point of change being Point Conception.

Four drainage areas are found in Santa Barbara County, three of which—the Santa Maria, San Antonio, and Santa Ynez valleys parallel the southern coast line and lie between the Santa Ynez and San Rafael ranges. The fourth comprises a narrow strip of coastal plain, lying between the Santa Ynez range and the ocean, and broken by a number of small streams.

The valley of the Santa Clara river forms the largest portion of Ventura County, with two smaller drainage areas, the Ventura River, and Simi and Las Posas valleys. These streams debouch upon a coastal plain area of considerable extent. Many small valleys and canyons contain considerable agricultural land and are well settled, as Lompoc, Goleta, Montecito, Carpinteria, Ojai and others.

“These counties have not so completely used their water resources as some others in the southern end of the state. This condition is accounted for by the fact that irrigation

is not altogether necessary for the successful production of crops. Santa Barbara County, especially, was in former years one of less industrial activity than districts to the south. The owners of Spanish grants and large tracts have been slower to dispense with the comparatively free and independent life of grain growing and ranching on a large scale for the greater financial profit in subdividing properties for sale and intensive culture. In this respect, this section partakes somewhat of the conditions in some of the large valleys of the northern and central parts of the state."—Report of Cal. Conservation Com. 1912.

2. SAN DIEGO COUNTY—This region is also much broken in surface, with the Coast Range as its backbone, cut up into many small spurs and extending in a generally parallel direction to the coast, at a distance of from thirty to fifty miles. While there are no large drainage areas there are numerous streams flowing in a general southwest direction. Santa Margarita, San Luis Rey, Escondido, San Dieguito, San Diego, Sweetwater and Otay are the principal streams.

The surface lying between the ocean and the Coast range is not coastal plain in character, but consists of numerous valleys separated by rolling hills and mesas, having no common direction. Among these are Fallbrook, Pala, Bear Valley, Pamo, Santa Ysabel, San Pasqual, Escondido, Jamul, El Cajon, and others. Scattered among the mountains are many small areas of plateau which are tillable.

"A strip of bench land borders the coast from the northern boundary of the county to the mouth of the San Diego river, a length of fifty miles and with a width not exceeding three miles at any point. This strip would be continuous except for the lagoons where the Santa Margarita, San Luis Rey, Escondido and Santa Ysabel rivers and other small streams enter the ocean. These lands slope gently towards the coast and are adapted to agriculture, although the ocean winds might not permit the growing of citrus fruits."

The average annual rainfall of the city of San Diego, 10 inches, is misleading, if considered as indicating the rainfall of the county as a whole. The U. S. Weather

Bureau reports average rainfall for Cuyamaca, 38 inches; El Cajon, 12 inches; Escondido, 15 inches; Fallbrook, 17 inches; Julian 28 and Poway 14 inches.

3. COASTAL PLAIN AND SAN BERNARDINO VALLEY—Connecting the two broken areas to the north and the south is a section comprising all of Orange County and portions of Los Angeles, San Bernardino and Riverside counties. This region is characterized, first, by having a coastal plain about fifty miles in length and fifteen in width; second, by having an interior valley, San Bernardino, which might be designated the "Great Valley of Southern California"; and includes the area drained by the Los Angeles, San Gabriel and Santa Ana rivers. The different sections of this region have many local names, as the San Fernando, San Gabriel, Pomona, Chino, and San Jacinto valleys.

This division is to the Coast Drainage Region of Southern California, in general, what the Mississippi Valley is to the United States. In area it comprises about one-third of the entire section and, according to the estimate of the State Conservation Commission, contains two-thirds of the probable irrigable territory.

Although this third section is not as generally mountainous in character as those to the north and south, the culminating points of the Coast Range, south of the Tehachapi, are found on its borders. These are the peaks of San Gorgonio, 11,485 feet; San Jacinto, 10,805 feet; San Bernardino, 10,680 feet, and San Antonio, 10,080 feet.

CLIMATE—In "Commercial Geography," Gannett, Garrison and Huston, the west coast of North America is placed in the "generally temperate" contour. The southern coast of California, owing to the presence of short, narrow valleys, open to the ocean, might be said to be the "most generally temperate" region of the "generally temperate" region of North America.

This section is by no means a strictly arid country, as it is often described. The annual rainfall over the entire area varies from ten to twenty inches; in its mountains the rainfall is between twenty and forty inches. As shown by the following table, the great capitals of Europe average but little higher rainfall than the city of Los Angeles.

COMPARATIVE RAINFALL LOS ANGELES AND EUROPEAN CITIES

(From Symes' Treatise on Rainfall)

City	Rainfall	City	Rainfall
Vienna	19.6	Los Angeles	15.6
Paris	22.9	(From U. S. Weather Bureau)	
Berlin	23.6		
Madrid	9.		
Petrograd	16.2		
London	24.		

LOWER SAN JOAQUIN VALLEY

Area, 11,000 sq. mi. Population, 88,000. Density, 8.

TOPOGRAPHY—This region is a part of the Great Valley of California. The streams supplying it with water are fed by snows stored in the highest Sierras, consequently the "run off" is less torrential in character than that of the Coastal Plain Region. "The division which consists of the main San Joaquin Valley is the largest irrigated section of the state, both in the area at present irrigated, and in its prospective development. It includes the lands lying in the main Valley floor, and the more or less rolling plains through which the Valley trough blends into the higher Sierra foothills.

"The Sierra foothills in Central California, comprise a belt of land on the western slope of the Sierra Nevadas, bordering the San Joaquin Valley and plains. . . . Between the Kern and the Tehachapi Mountains, at the southern end of the San Joaquin Valley, the foothills rise abruptly from the Valley floor, and are followed by ranges gradually increasing in height until the summit of the Sierras is reached. The cultivable areas are found largely along the foot of the slopes or in small valleys or coves back of the first range of hills, as in the Tulare County citrus belt."—California Conservation Commission Report, 1912.

CLIMATE—The climate of the Lower San Joaquin Valley Region is similar to that of the Coast Region, except that it is subject to somewhat greater extremes of heat and cold. The rainfall also is much less than in the Coast Region.

MEAN TEMPERATURE AND RAIN FALL

	January	February	March	April	May	June	July	August	September	October	November	December	Annual Rainfall	Clear Days	Rainy Days	Cloudy Days	Partly Cloudy Days	Highest Temperature	Lowest Temperature	Elevation	REMARKS
Bakersfield	47	52	57	63	71	79	85	83	75	65	56	47	5					118	13	394	San Joaquin Valley
Hanford	46	50	54	61	67	75	79	77	72	64	54	46	9					113	18	249	"
Callexico													4					117	24	0	Imperial County
Los Angeles	53	54	56	58	61	65	67	69	67	62	58	55	16	157	36	56	152	109	28	293	Near Sea coast
.....																					
Riverside	51	53	56	60	65	71	76	76	72	64	58	53	11	232	41	57	76	112	21	851	Near east end San Bernardino Valley
Santa Barbara	54	55	56	58	59	63	65	67	66	63	59	56	18					108	29	130	On sea coast
.....																					"
San Diego	54	55	56	58	61	64	67	69	67	63	59	56	10	266	43	50	49	101	32	93	"
Independence																					
Bishop	39	43	46	54	60	69	73	72	64	56	46	39	6	270	22	43	52	109	-4	4450	Inyo County
Escondido	49	52	55	58	63	68	72	72	68	62	56	51	15	143	39	31	191	113	13	657	Near sea coast San Diego County
San Jacinto	50	52	54	59	64	70	76	76	71	64	56	50	13	236	39	46	83	112	19	1550	Near east end San Bernardino Valley
Cuyamaca	37	38	41	46	50	60	67	66	60	51	44	39	38	220	60	66	79	96	-1	4677	Mountain Region San Diego County
Bear Valley Dam													33							6500	" San Bernardino
Idyllwild													27							5250	" Riverside
Lowe Observatory													25							3420	" Los Angeles
Redlands	45	49	54	60	67	76	82	81	74	64	54	47	15	228	41	61	76	113	25	1352	Near east end San Bernardino Valley
San Bernardino	52	54	56	60	64	70	76	76	71	64	57	52	16	213	44	47	105	112	18	1054	Near east end San Bernardino Valley
Upland	50	52	54	58	60	67	73	73	70	64	57	52	21	280	34	37	48	108	22	1750	Central portion San Bernardino Valley
Salton													3	308	6	35	22			263	Eastern part Riverside County

GREAT BASIN AND COLORADO RIVER VALLEY

Area, 45,000 sq. mi. Population, 25,000. Density, 2.

TOPOGRAPHY—The Great Basin is by far the largest section of Southern California. It is a part of the great interior plateau extending from the Rocky Mountains, on the East, to the Sierra Nevadas, on the West. With the exception of Death Valley and the lower Colorado River Valley, it is much higher in elevation than the Coast Drainage or Lower San Joaquin Valley regions. The surface of this plateau is broken by many mountain ranges running in a general north and south direction. Some of the peaks in these ranges are cones of extinct volcanoes with evidences of comparatively recent eruptions.

Although but little of this area is true desert, in the sense of being a mass of shifting sands without vegetation of any kind, the annual rainfall—except at points along the foot of high mountains—is less than five inches. This fact renders crop production, with our present knowledge, impossible.

“There is a lack of shadow and absence of relief that makes the distance deceptive. The glare of the noonday sun conceals, rather than reveals the grandeur of the rugged land which is best brought out in the rich colors of sunset and sunrise. As the sun sinks and the shades grow deeper and deeper, each ravine and canyon becomes a fathomless abyss of purple haze, shrouding the bases of gorgeous towers and battlements that seem incrustated with a mosaic more brilliant and intricate than that of Venetian artists; and as the twilight deepens, the ranges become sharp silhouettes drawn in deepest purple against a brilliant sky.”

The above description applies to the central and eastern parts of the plateau. Along its western borders Owens Valley faces the grand scenery of the sharp eastern face and the high peaks of the Sierras; Antelope is a crescent shaped valley located at the base of the Coast Range; Mojave River Valley is backed by the high San Bernardinos; Coachella Valley is near the foot of San Jacinto Peak; Imperial Valley now contains hundreds of thousands of acres of green fields. Throughout this wide area

are many small springs and a few very large ones. Wherever there is water, vegetation grows profusely.

CLIMATE—The climate of this region is more variable than that of the Coast Drainage section. The winters, except in the lower Colorado Valley, are colder. The temperature ranges from a few degrees below zero in winter to 120 degrees or above, in the shade, in the summer time. (See page 10.)

II. AGRICULTURAL PRODUCTS

TILLABLE AREA—"In the variety of its agricultural products, California has no equal in any other state of the Union; of the most important of these products, the quantity that can be furnished is only limited by the supply of labor and the facility in finding profitable markets."—Harper's School Geography, (Chapter on Pacific Coast States, 1887).

Owing to the generally arid character of the southwestern part of the United States, Southern California has been mistakenly regarded as a region incapable of large agricultural development. Yet figures published by the government in the Census Report for 1910 show that the value of the agricultural products for "South of the Tehachapi Counties" alone was about \$48,000,000, exceeding that of the states of Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New Jersey, Delaware, Maryland, West Virginia, Florida, Oregon, Montana, Wyoming, New Mexico, Arizona, Nevada, or Utah.

CROP VALUATION FOR SOUTHERN CALIFORNIA

From U. S. Census, 1910

County	Total Value of all Crops 1909
Imperial	\$ 1,438,425.00
Inyo	532,643.00
Kern	1,803,255.00
Kings	3,180,114.00
Los Angeles	14,720,884.00
Orange	6,176,337.00
Riverside	5,133,576.00
San Bernardino.....	6,818,233.00
San Diego	2,861,136.00
Santa Barbara	3,568,250.00
Tulare	5,353,994.00
Ventura	6,751,759.00
	<hr/>
	\$58,338,606.00

ACREAGE AND VALUE CALIFORNIA CROPS, 1909

(U. S. Census, 1910, Vol. 5, Agriculture, pp. 858-864.)

	Acreage	Value per acre
Tropical and subtropical fruits....	99,000	\$154
Corn	17,802	25
Potatoes	32,735	75
Timothy and clover, mixed.....	20,880	15
Sugar beets	14,657	57
Grains, cut green.....	101,187	15
Orchard fruits and grapes.....	148,475	64
Alfalfa	366,642	27
Wheat	22,608	19
Barley	77,785	14

According to the December, 1914, Bulletin of State Horticultural Commission, there is at present an acreage of about 120,000 bearing orange and lemon trees in the twelve southern counties of California. The same authority gives the total acreage of all fruit trees as bearing, 211,000; non-bearing, 126,000; total, 337,000 acres.

The Report of the State Equalization Board for 1914 gives the total of fruit trees in these counties, "growing in the spring of 1914," as about 12,700,000 bearing and 3,400,000 non-bearing. The same authority gives the acreage of alfalfa for the same district and the same time, as 313,000; sugar beets, 45,678 acres; wheat, 130,495 acres; barley, 292,000 acres.

It will be seen by these figures that the acreage now under cultivation in Southern California exceeds the acreage for the entire state in 1909, in some of the principal crops.

Southern California has four areas capable of considerable agricultural development: 1. The Coast Region. 2. Colorado River Region. 3. Lower San Joaquin Valley. 4. Owens, Mojave, Antelope, and other valleys of the Great Basin.

1. COAST REGION—The total area of the Coast Drainage Region is about 14,000 square miles, or 9,000,000 acres. The Report of the State Conservation Commission, for 1912, classifies the agricultural lands of this section as follows:

	Agricultural Land	Now Irrigated	Estimated for Irrigation
Santa Barbara and Ventura.....	509,000	50,000	322,000
San Diego	364,000	20,000	87,000
*San Bernardino Valley and Coastal Plain	1,300,000	380,000	661,000
	<hr/> 2,173,000	<hr/> 450,000	<hr/> 1,173,000

Owing to the semi-tropic character of the climate, which gives practically a monopoly in the production of certain things, as walnuts; to the generally favorable conditions for the growing of citrus and other semi-tropic fruits; to the presence of a large urban population, calling for truck farming, and to the limited supply of water which makes intensive farming in small units a necessity, it seems not unreasonable to figure the gross returns per acre on the million acres of irrigable lands in this section at from \$75 to \$150, when it is fully brought under cultivation. The gross returns from the million acres for which there is no water may be estimated at \$15 per acre.

According to census figures, 1910, 98,000 acres of citrus fruits and nuts in California produced in 1909 a gross value of \$154 per acre; strawberries \$300 per acre; nursery products over \$400; lands set to flowers and plants, nearly \$1400 per acre. As a comparison, the Yearbook of the Department of Agriculture, 1894, page 131, states that 326,816 acres devoted to truck farming along the Atlantic seaboard produced \$45,177,521 worth of truck; the highest average, in the vicinity of New York and Philadelphia, being \$226 per acre, while the general average for the acreage was \$137.

In 1909, Los Angeles County, with its valuation of over \$14,000,000 for agricultural productions, exceeded any other county in the United States. According to estimates of the State Conservation Commission, there is an acreage of 380,000 within a radius of thirty miles of the city of Los Angeles which is susceptible to irrigation. With the favorable climate; already extensive system of interurban electric lines and "Good Roads"; with its many railway connections and a good harbor, giving easy water commu-

*Classed in report as Los Angeles, San Gabriel and Santa Ana River Lands.

nication with the markets of the world; and with a dense local population, it is not unreasonable to expect a gross production of \$150 per acre from this land, when it is fully cultivated, thus giving this area an annual valuation of nearly \$60,000,000, a figure not likely to be exceeded by any other county anywhere.

In order to illustrate the dense population that the Coast Drainage Region of Southern California will support, the following table has been prepared, showing the population of areas of Europe similar in character.

	Area sq. miles	Population	Density per sq. mile
Coast Drainage Region So. California....	14,000	735,000*	52
Los Angeles, city, contains nearly 44% of population.			
Mediterranean Coast Region, France.....	14,500	2,900,000†	200
Cities: Marseilles, 550,619; Nice, 142,940; Toulon, 104,862.			
Southeast Mediterranean Coast Region of Spain	15,500	2,000,000	130
City of Malaga, 133,045.			
East and N. E. Coast Region Spain.....	14,400	2,900,000	200
Barcelona, 560,000.			
Sicily, Italy	10,000	3,700,000	370
Commune of Palermo, 341,088; of Catania, 210,703; Messina, 126,556.			

*Census, 1910.

†Population figures from Statesman Year Book, 1914.

2. COLORADO RIVER REGION—Reports of the Colorado River Regulation Commission, United States Reclamation Service and the California Conservation Commission show that at least 1,000,000 acres in the lower valley of the Colorado River can be supplied with sufficient water, when reservoirs are constructed for the storage of a portion of the flood waters of this river.

The hot climate of this district is most favorable to winter growth of vegetables and the early maturing of fruits, while the abundance of silt-bearing water enables the production of several crops a year from the same ground. With such advantages, it is not unreasonable to estimate the total gross production from this area at \$50,000,000, or \$50 per acre, when it is fully developed.

This figure is justified by results already obtained in

Imperial County, which with approximately 260,000 acres under cultivation, has become the second county in the state in the value of its cattle, \$1,316,000, in assessed valuation, 1914; its production of butter for 1914 (State Dairy Bureau) was 5,700,000 pounds. According to the report of the State Board of Agriculture, 1913, 22,000 acres of cotton in this county produced a value of \$1,500,000, in 1913, the yield being 21,500 bales of 500 pounds each, the highest average in the United States.

According to Gannett's Commercial Geography, page 374, "The settled area of the valley of the Nile is about 13,000 square miles and supports a population of 9,700,000." Should the Colorado River Region become as densely populated relatively as the Nile Valley, it would sustain a population of over 1,000,000.

3. **LOWER SAN JOAQUIN VALLEY REGION**—The report of the California Conservation Commission shows a total of 1,650,000 acres of land in the lower San Joaquin Valley, south of Kings river, for which water may be supplied. Assuming 1,000,000 of this as directly tributary to Southern California and a gross production of \$50 per acre, gives a total valuation of \$50,000,000.

4. **THE GREAT BASIN REGION**—It is estimated that there are at least 200,000 acres of land that can be supplied with water in Owens Valley, Antelope Valley, Mojave River Valley, and other desert basins.

TOTAL—It will be seen that the possible agricultural production for Southern California territory, when lands which can be supplied with water now in sight have been placed under irrigation and cultivation, is as follows:

Coast Region—

380,000 acres at \$150 per acre.....	\$ 57,000,000
660,000 acres at 75 per acre.....	49,500,000

Colorado River Region—

1,000,000 acres at 50 per acre.....	50,000,000
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Lower San Joaquin Valley—

1,000,000 acres at 50 per acre.....	50,000,000
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Great Basin Region—

200,000 acres at 50 per acre.....	10,000,000
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\$216,500,000

To this must be added the returns from 1,000,000 acres

in the Coastal Plain Region which is classed as agricultural land, for which there is no water supply, and estimated at an annual gross production of \$15 per acre. This makes a grand total of over \$230,000,000 for Southern California's possible farming products.

CHIEF CROPS

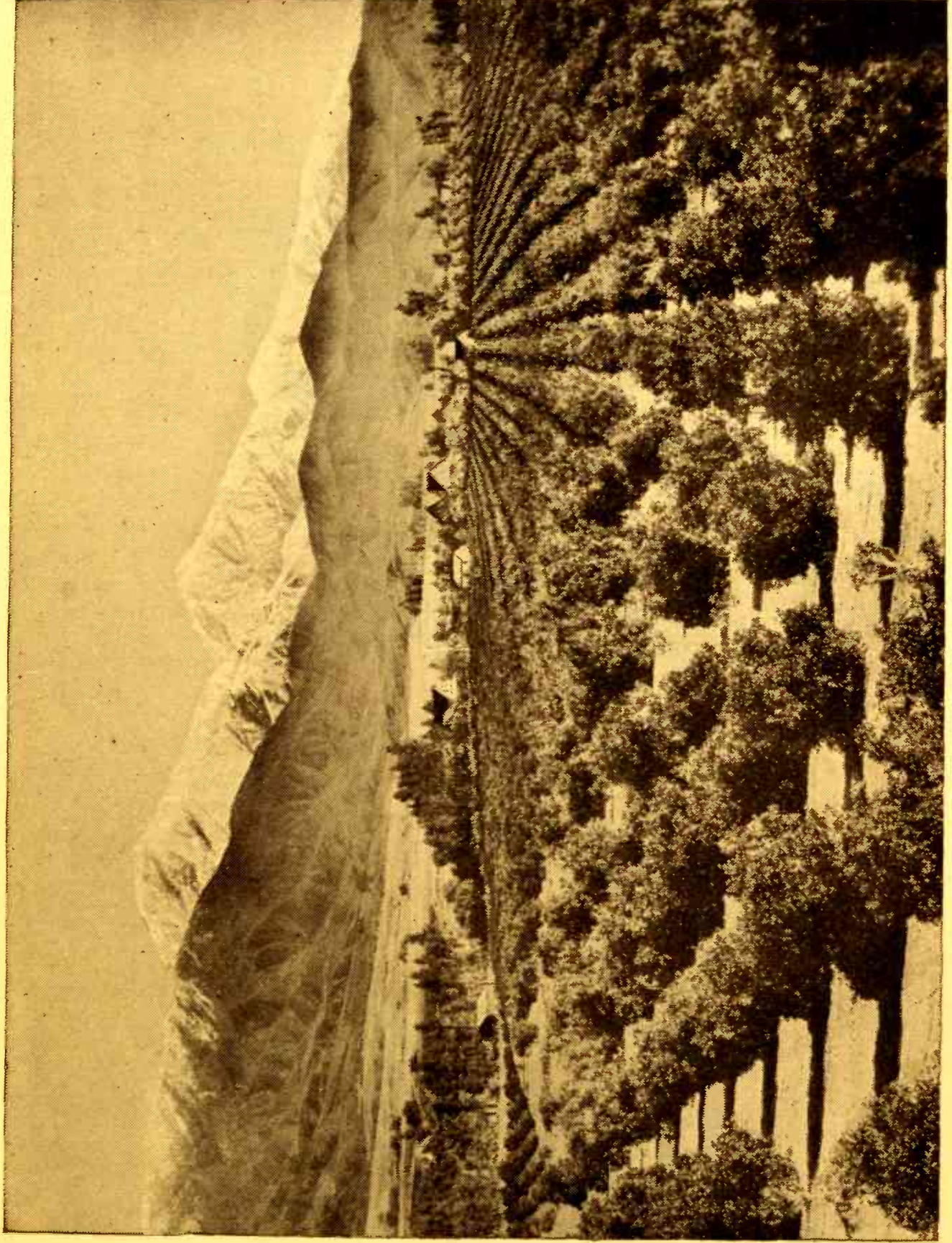
CITRUS FRUIT—The census reports for 1910 show approximately 8,700,000 bearing orange, lemon, pomelo, olive and fig trees in the state, of which 7,600,000 were in the twelve southern counties. The December, 1914, Bulletin of the California State Horticultural Commission reports an acreage in fruit trees in these counties of about 337,000, of which 211,000 is in bearing trees and 126,000 non-bearing. Los Angeles County leads with 71,000 acres; San Bernardino County is credited with 68,500 acres; Tulare, 56,500; Riverside, 41,500.

About 127,000 acres is planted to bearing tropical fruits, and 79,000 to trees not yet in bearing. The bearing acreage is listed as 101,000, oranges; 18,600, lemons; 5500, olives; 800, figs. San Bernardino County leads with 32,800 acres in bearing orange trees; Los Angeles is second with 25,585 acres; Tulare County reports 30,000 acres planted to orange trees not yet in bearing. Los Angeles County is first in lemon acreage with 5000 acres in bearing fruit; San Diego reports 3000 acres and Riverside 2400.

The State Horticultural Commission reports that the tonnage of oranges for 1914 was 577,520, San Bernardino being the largest producer, with 192,738 tons; Los Angeles second with 153,575 tons. The production of lemons amounted to 41,587 tons, Los Angeles being the first in production, with 16,875 tons.

The Citrus Protective League gives the shipment of lemons and oranges for the state, for 1910-11, as 46,081 cars, with an f.o.b. valuation of \$28,200,000. The shipments for the year, September 1, 1913, to September 1, 1914, were 45,564 cars, with f.o.b. valuation of \$29,300,000.

Circular No. 121, College of Agriculture, Berkeley, "Things a Prospective Settler Should Know," mentions the following sub-tropical fruits as "now being grown in California, and of sufficient importance to warrant commercial plantings: Pomegranate, guava, feijoa, loquat,



EAST END SAN BERNARDINO VALLEY

Courtesy S. P., L. A. & S. L. Ry.

Japanese persimmon, avocado, date. All these crops require irrigation."

The requisite condition for producing dates is said to be found in the Imperial, Coachella and Colorado valleys, and a considerable acreage has been set to date palms. In 1912 California produced 1,200 pounds of dates and imported 25,000,000 pounds.

The nutritious character of three of the important crops of Southern California may be illustrated by the fact that "The oasis of Tozeur, in southern Tunisia, with an area of only 2,200 acres, is said to furnish nourishment for 15,000 people, whose food consists almost entirely of dried dates, beans and olive oil."—National Geographic Magazine, January, 1914.

DECIDUOUS FRUIT—Figures published in the December, 1914, Bulletin of the State Horticultural Commission show between 130,000 and 140,000 acres planted in fruits and nuts other than semi-tropical. After oranges, peach and apricot trees have the largest acreage, Kings leading in bearing peach trees and Ventura with the largest acreage in apricots. Southern California has not been considered an apple country; but there are now over 5000 acres in bearing apple trees and over 16,000 acres non-bearing. San Bernardino has 10,131 and Riverside 2419 acres not yet bearing. Los Angeles reports 1400 and San Diego 1110 acres of bearing apple trees. A considerable acreage is planted to pear, prune and plum trees.

No statistics are available for the shipments of fresh fruit by counties; but increased production and facilities for shipping are making this an important feature of the deciduous fruit market. The report of the State Board of Agriculture, 1913, gives the shipment for the state as 13,322 cars in 1912. Reports compiled by the California Fruit Grower for 1914 show a shipment of 16,146 cars of fresh fruit for the season of 1913-14. According to report of the State Agricultural Board, over 5,000,000 cases of canned fruit were produced in 1912; and 253,500 tons of dried fruit was packed.

SMALL FRUITS: The census reports give the value of small fruits for 1909 as \$1,789,214. Strawberries alone were valued at \$1,149,475. Los Angeles County was the leading one in the state in the production of small fruits,

with an acreage of 1975, of which 1380 acres was in strawberries.

GRAPES—Tulare County led in the number of grape vines, according to the census figures, with 7,237,000 vines; San Bernardino had 5,987,000 vines; Los Angeles, 4,923,000 and Kings 4,538,000 vines. Some of these were of raisin varieties but the majority were wine grapes. San Bernardino County now has one vineyard of 3200 acres. The largest acreage in this vicinity is located about Cucamonga in a district formerly considered a barren plain.

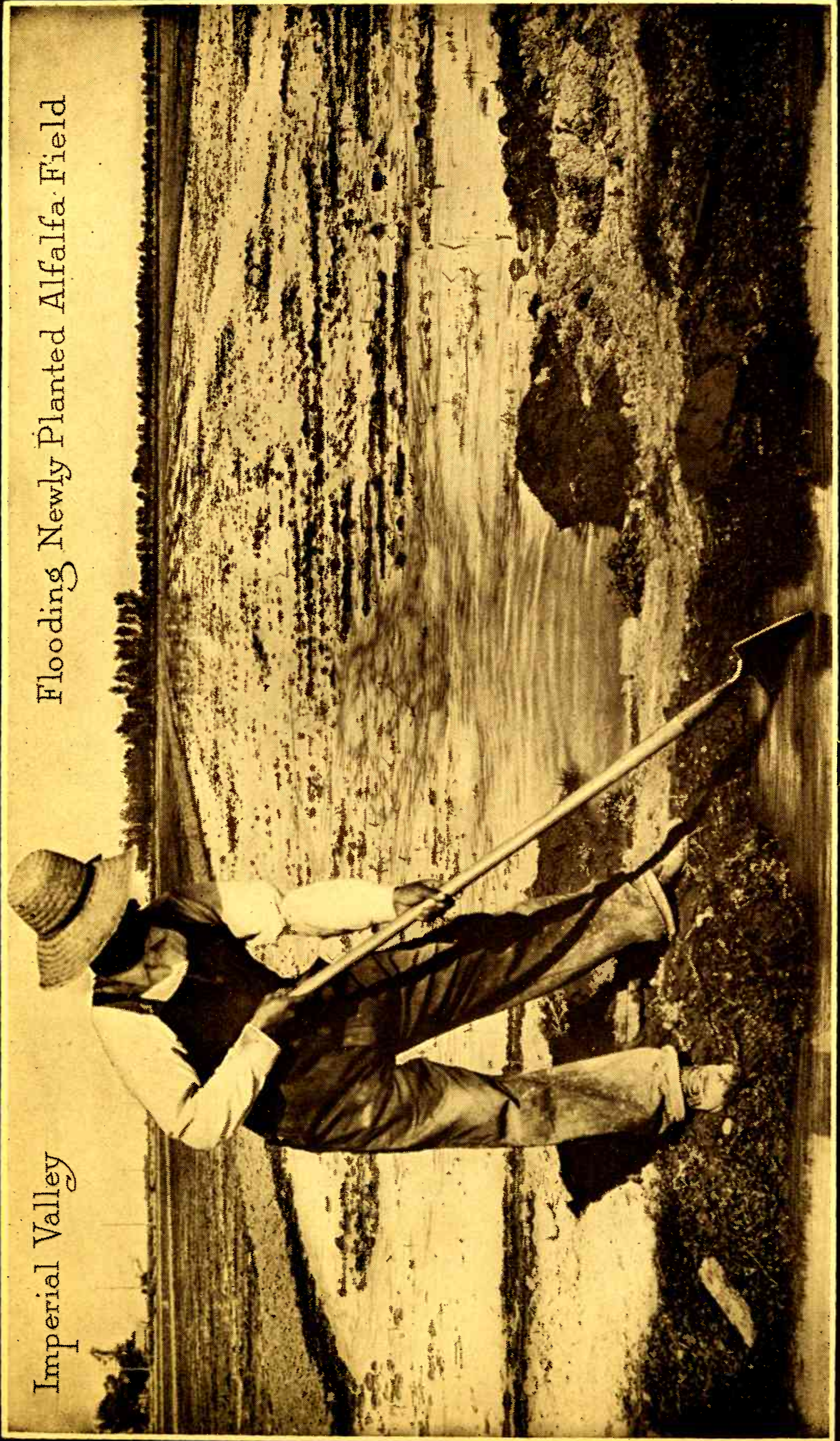
RAISINS—An average annual production of raisins is estimated as about 160,000,000 pounds, of which Tulare County produces 25,000,000; Kings County, 20,000,000; San Bernardino 3,600,000 and San Diego, 3,200,000 pounds. The average valuation is put at about \$4,840,000. (State Board of Agriculture Report, 1913, page 123.)

NUTS—There is an acreage of about 35,000 in bearing walnut trees (Horticultural Report, 1914), of which Orange County has 11,900 acres, with Los Angeles and Ventura next in production. The crop of 1912, according to State Agricultural Report, 1913, was 21,432,000 pounds, of which over 19,000,000 pounds is credited to Orange, Ventura, Los Angeles and Santa Barbara counties. The same authority states that California furnishes about half of the annual supply of walnuts consumed in the United States. In almond culture Riverside leads with 818 acres in bearing and 1328 acres non-bearing. Pecans are produced in several of the southern counties, San Diego and Los Angeles having been the largest producers in 1909. Peanuts are also a profitable crop on some of the lower lands of the Santa Ana Valley.

CEREALS—The census figures make Tulare County, with a valuation of \$1,443,000, the leading county in the south in 1909, in the production of cereals. The report of State Agricultural Board, 1913, gives Los Angeles County an acreage of 9084 in corn; San Diego has 4,554 acres in corn and Orange 3054, these counties being the leading ones in the state in this crop. According to figures prepared by the Horticultural Commission of Los Angeles County, the acreage in wheat in 1912 was 6150; barley,

Imperial Valley

Flooding Newly Planted Alfalfa Field



31,600 acres. Santa Barbara County is the leading one in the south in 1909 in its acreage of oats.

BEANS—Lima beans are now one of the most important crops of the state. The average production from 1908 to 1914, according to State Agricultural Report, 1913, was 2,194,000 sacks per annum. The bulk of this crop is raised in the southern counties. The value of the bean crop for 1910 is given as \$6,292,955. (Report State Board of Agriculture, 1913.)

HAY AND FORAGE—Los Angeles County, with a valuation of \$3,431,000 and an acreage of 154,000, was the leading county in the state under this head in the census report of 1910, the southern counties having a total of over \$14,000,000 in value.

SUGAR BEETS—California in 1909 was the second state in the Union in the production of beet sugar, the southern counties being the chief producers. Of the twelve beet sugar factories in California, nine are located in the south, as follows: American Beet Sugar Co., at Oxnard, Ventura County, and Chino, San Bernardino County; Union Beet Sugar Co., Betteravia, Santa Barbara County; Los Alamitos Sugar Co., Los Alamitos; Southern California Sugar Co., Santa Ana; Anaheim Sugar Co., Anaheim, all in Orange County; Pacific Sugar Co., Corcoran, Kings County, and Visalia, Tulare County, and Holly Sugar Co., Huntington Beach. In 1912 the production for the southern part of the state was 475,000 tons, the price varying from \$4.50 to \$9.90 per ton. 317,800,000 pounds of sugar was made this year. (State Board of Agriculture, 1913.)

COTTON.—Imperial County, with an acreage of about 37,000 and Palo Verde Valley, in Riverside County, 3000 acres, are the only districts producing cotton in commercial quantities in California. El Centro and Calexico are the chief centers. Farmer's Bulletin 645, of the U. S. Department of Agriculture, gives the yield per acre for 1914 as 506 pounds (nearly double that of any other state); the total production as 37,000 bales, with a valuation of \$1,240,000. The average price per pound December 1, 1914, was 7 cents as against 13 cents December 1, 1913.

VEGETABLES—The raising of vegetables is becoming one of the important resources of the state, as facilities

for shipment of fresh vegetables and for canning and drying increase. All of the southern counties raise large quantities. Tomatoes are produced extensively in Ventura County; celery in Orange County; cabbage, asparagus and assorted vegetables in Los Angeles County. Census figures make Los Angeles the leading county in the state, with an acreage for 1909 of 13,385, exclusive of beans and potatoes, with a total valuation of \$1,255,000. According to State Board of Agricultural Report, 1913, the average annual shipment of celery from the state is 2500 cars, the bulk from the southern district; cauliflower and cabbage each average 1000 cars per year, with Los Angeles County leading in shipment.

Census figures give the total of 990,654 cases (24 standard size 2 and 3 quart cans) of vegetables with a valuation of \$3,470,000, for 1909. The total output of canned vegetables for 1912 was 2,506,155 cases; for 1913, 2,192,330 cases. (Cal. Fruit News, Dec., 1914.)

III. ANIMAL PRODUCTS

In early years the southern counties were known as the "cow counties," because grazing was their chief industry and hides and tallow their principal wealth. That these counties are still "cow" counties is shown by the fact that according to the 1910 census figures the twelve southern counties had 591,000 head of cattle out of a total for the state of 2,077,000 and 142,455 horses out of a total of 468,455. But while there is still considerable range stock in this section, the chief value is now in beef and in dairy products; while horses have decreased somewhat in number and increased materially in price.

DAIRY PRODUCTS—Imperial County is first in the value of its dairy products. The figures of the State Dairy Bureau give it 2,885,000 pounds of butter for 1911; 5,398,000 pounds in 1913 and 5,710,000 pounds in 1914. Kings, Tulare and Santa Barbara counties are next in production in the south. Cheese is not manufactured in any quantity as yet, although large amounts are imported into the district. The sale of milk and cream is also an important branch of the industry in the southern counties. The value of the butter produced in the southern counties

in 1912 was over \$4,000,000 for a production of about 14,000,000 pounds.

SHEEP—In 1910 Kern County led in the southern counties in the number of sheep; Santa Barbara was next, followed by San Diego.

CATTLE—The leading counties in the south in 1910 were Kern, Tulare and San Diego. Imperial County has increased very rapidly in this industry, as is shown by its butter production and now ranks as one of the leading counties in the state in cattle.

POULTRY AND EGGS—The census gives the value of poultry and eggs in California in 1909 as over \$14,000,000. Los Angeles County is the second in the state, with Orange, Tulare, San Diego and Santa Barbara counties following. With a production of over 2,000,000 dozen eggs, Los Angeles County imports large numbers, and the state imports eggs every year from other states and countries.

HONEY—Nearly all the southern counties have “bee ranches,” as they are known, scattered among the hills and valleys, often on land which is not otherwise productive. In 1909, Ventura County produced the largest quantity of honey in the state, 1,839,000 pounds. San Diego was second and Los Angeles the third county in production. The value of the honey crop for 1910 is given as \$729,793.

IV. MINERAL PRODUCTS

Nearly all known minerals are found in Southern California, the Great Basin Region being the chief field of production of salines and precious metals, while oil is found near the coast and in San Joaquin Valley. The following statement concerning San Bernardino County, applies in general to this whole territory:

“No portion of California has more diversified mineral wealth than the county of San Bernardino. Although its area is composed largely of rugged mountains and desert waste, yet this county is a producer of gold, silver, copper, lead, zinc and tin, and contains mines of iron and manganese, besides deposits of borax, salt, soda, baryta, gypsum, sulphur, onyx, marble, asbestos and structural mate-

rial, granite and sandstone of great beauty and value. Its mines are scattered all over its thousands of square miles of territory and have already added millions of dollars to the wealth of the state and the world." (11th Annual Report, State Mineralogist.)

Although the production of the precious minerals is not as great in this part of the state as formerly when the large camps of Cerro Gordo, Calico, Ivanpah and Providence Mountain were in operation, Randsburg in California and Goldfield, Tonapah and Searchlight, just across the border in Nevada, are still large producers.

That the mineral productions of this section are not falling off is evidenced by the following table, taken from the reports of the State Mineralogist:

County	1910	1911	1912	1913
Imperial	\$ 97,656	\$ 105,044	\$ 30,000	\$ 95,054
Inyo	704,473	710,033	483,330	1,942,309
Kern	19,614,014	21,176,531	23,097,003	28,406,100
Kings	10,085	900	1,850	1,335
Los Angeles	5,525,317	5,407,863	5,594,513	5,833,300
Orange	3,220,164	4,113,585	4,518,275	6,948,495
Riverside	507,406	622,489	782,627	2,071,969
San Bernardino....	447,836	710,108	1,428,057	2,486,100
San Diego	374,874	419,008	305,683	315,694
Santa Barbara....	5,334,960	3,411,107	4,111,258	3,636,288
Tulare	206,050	158,335	142,890	119,760
Ventura	392,974	362,810	595,399	924,972
	<hr/>	<hr/>	<hr/>	<hr/>
	\$36,435,809	\$37,197,813	\$41,000,865	\$52,781,376

The totals for the state are given, 1910, \$88,419,000; 1911, \$87,497,800; 1912, \$88,972,000; and 1913, \$100,791,000. As will be seen, about half of total production is found in the counties named.

PETROLEUM—The largest mineral resource at the present time is oil, the production for 1913 being valued: Kern, \$27,038,000; Orange, \$6,867,000; Santa Barbara, \$3,151,725; Los Angeles, \$2,672,000; Ventura, \$907,997.

The value of fuel oil is increased by the fact that it furnishes a cheap fuel supply for manufacturing purposes. New methods of applying it are expected very soon to enable the smelting of iron, thus bringing the vast iron deposits of this country into use. It furnishes a cheap and readily handled fuel for railroad and steamships and

has thus greatly benefited our transportation systems. It is also one of our largest items of export.

Natural gas is becoming an increasingly valuable factor also, and is one which has as yet been but slightly developed.

GOLD—Of the southern counties, Kern was the largest producer of gold in 1913, the value being given as \$649,712; San Bernardino, \$356,524; Inyo, \$237,310. Imperial, Riverside and Los Angeles counties also produce gold. Silver was mined in 1913 in San Bernardino and Inyo counties.

CRUSHED ROCK—One of the large industries is known as the "crushed rock" or "stone" industry and includes macadam, rubble and materials used in road work. Los Angeles County led in 1913 with a value of \$489,000; San Bernardino produced \$314,665 and Riverside \$268,643. San Bernardino furnished lime to the amount of \$113,856.

BRICK AND CEMENT—The production of these two commodities is also large in the south end of the state. Los Angeles County turned out brick to the value of \$1,752,000—nearly half the amount produced in the state; four cement plants have a capacity of about 10,000 barrels per day; the total production for state, 1913, was over 6,000,000 barrels, valued at about \$8,000,000.

IRON—There are large deposits of iron ore in Riverside, San Bernardino and Inyo counties, which have never been utilized. The following statement is made: "With improvements in the metallurgy of iron and steel, the changes to be wrought in commercial conditions by the opening of the Panama Canal, and the gradual depletion of the iron ranges in the East, this branch of mineral industry in California should soon become one to rank with petroleum and gold in the value of the output." (Bulletin 65, California State Mining Bureau.)

COPPER AND LEAD—In 1912 San Bernardino was the third in the state in the production of copper, with a valuation of \$319,636. Inyo is the chief field for lead production, with a total of 3,332,000 pounds in 1913.

BORAX—California has the only known borax supply in the United States. It is obtained chiefly from the Mojave Desert in San Bernardino, Kern and Inyo counties. The valuation for 1912 was \$1,122,713.

POTASH—This state is also the only known source of potash in this country, the supply having hitherto come from Germany. The only plant as yet in working order is located in Inyo County.

MINERAL SPRINGS—Southern California has numerous mineral springs. Arrowhead in San Bernardino County; Elsinore and Murietta in Riverside County, Warner's in San Diego and Matilija in Ventura County are among the many resorts whose scenic locations in the mountains and in game regions attract many, in addition to those seeking the curative powers of the waters. The value of the output of mineral waters for the state for 1913 was over \$500,000.

V. MANUFACTURING

Manufacturing follows the development of natural resources and demands as its primary condition a high degree of civilization. It requires also raw materials in abundance, with auxiliary materials necessary for processes of transformation within convenient range; transportation facilities for the handling of both raw materials and finished products; power and labor at reasonable cost; markets easily reached; conditions, in general, favorable to the processes and the people engaged in its operation.

Southern California is now entering upon this stage of its development. It has a large and rapidly growing population with highly specialized needs. It is brought by its railroads and its ports into trade contact with other districts and countries with like growth and increasing demands. It has four transcontinental lines, traversing the great Southwest and entering its territory through passes of comparatively low grade and freedom from snow; two harbors, with fine and rapidly increasing facilities for handling commerce, are reached by these lines. The opening of the Panama Canal has placed the Atlantic seaboard

within reach by water and reduced transportation cost. The development of petroleum production, the supply of natural gas, and the long distance power lines, supply cheap fuel and power. While the Coastal Plain Region furnishes ideal physical conditions for industrial expansion.

That this expansion has already begun is shown by the reports of the U. S. Census, from which the following figures are taken:

LOS ANGELES—

	Capital Invested	No. Establishments	Average No. Employed	Output
1899	\$10,054,000	534	6,096	\$15,134,000
1904	28,181,000	814	13,189	34,814,000
1909	59,518,000	1,325	21,875	68,586,000

SAN DIEGO—

	Capital Invested	No. Establishments	Average No. Employed	Output
1899	\$ 990,000	57	255	\$ 670,000
1904	1,991,000	89	541	1,974,000
1909	5,326,000	117	1,071	4,471,000

As will be seen, Los Angeles nearly doubled the value of her manufactured product between 1904 and 1909, and San Diego more than doubled her manufactured products. The Industrial Bureau of the Los Angeles Chamber of Commerce, in 1914, issued a "Manufacturer's Directory," giving names and addresses of over 1800 firms within the city and of about 250 in the county outside the city. The San Diego Chamber of Commerce states that over 200 manufacturing firms are located in that city (1915). In 1909 the number of establishments under the head of "Automobiles" was given for the entire state as 41. About 100 establishments are listed in Los Angeles as concerned in the manufacture of automobiles, auto trucks, parts and accessories, in the Manufacturers' Directory.

Since the last census figures were taken the moving picture industry has developed into large proportions. Conditions of climate, atmosphere and scenery have made Southern California the center of film production for the United States, it being estimated that about 75% of the films used in this country are produced in this territory.

There are at least sixty establishments in Southern California for the preservation and canning of fruit, vegetables and fish. This is also one of the most important industries

of the state, the value of the output for the year 1909 being given as over \$32,000,000. The various branches of canning, drying, pickling and preserving deciduous fruits and vegetables, and of drying, smoking and canning fish, particularly tuna, give employment to a large number of people. There are 35 firms in Los Angeles engaged in the manufacturing of confectionery. The packing of candies and candied fruits is becoming an important item of industry. With a sugar production in 1912 of 1,500,000 bags of 100 pounds each in Southern California (State Board of Agriculture, Report for 1913), with every possible combination of fruit and flower as flavors, and with the lowered rates of transportation, it is certain that the manufacture of confections is destined to increase rapidly.

A number of firms in Southern California are engaged in the manufacture of fertilizers, which are used in large quantities on citrus and other fruit lands. The manufacture of phosphates from kelp is a promising field, with several establishments already in the field. The American Trona Company, organized to refine and market different saline products of Searles Lake, Inyo County, has completed 31 miles of railway, connecting the Nevada & California Railway at Searles with Trona, and is erecting a plant with a daily capacity of about 1800 tons. (U. S. G. S. Mineral Resources, 1913.) Searles Lake contains the only known supply of potassium products in the United States; as this country imported over \$10,000,000 of potassium from Germany in 1913, its value at the present time can be seen.

One of the largest fields of manufacture, employing a large number of men is classed under "crushed rock" industries; the utilization of clays forms another important item, in the making of brick, tile, pipe, etc. Cement plants are located at Colton and Oro Grande, San Bernardino Co., and Riverside, and the city of Los Angeles owns a plant at Monolith, Kern County. According to a report made by the Bureau of Labor, seven plants in the state were in operation, 1914, with over 2,000 employees. The growth of this industry is seen from the fact that "the reported production of cement in 1891 was 5,000 barrels, valued at \$15,000, while that for 1913 was 6,167,806 barrels, with a value of \$7,745,024."

TRANSPORTATION AND COMMERCE

GOOD ROADS—The total absence of inland waterways; the mountainous character of much of its area, making railroad construction expensive; the division of the surface into many small valleys, which will support wagon roads but not steam or electric lines; the rapid increase in the use of automobiles and motor trucks; the favorable climatic conditions and the beauty and diversity of the scenery, are all factors in the development of the "Good Road" movement in Southern California.

During the past five years bond issues to be spent outside of incorporated cities have been voted as follows:

Los Angeles County.....	\$ 3,500,000
San Diego County.....	1,500,000
Orange County	1,270,000
Kern County	2,500,000
Riverside County	1,125,000
San Bernardino County.....	1,750,000
Kings County	672,500
Ventura County	1,000,000
	<hr/>
	\$13,317,500

In addition to this, the amount expended by the State Highway Commission in Southern California will reach at least \$4,000,000 by 1916. This system connects Los Angeles with San Diego and San Diego with El Centro; Los Angeles and the east end of the San Bernardino Valley; Los Angeles and the northern part of the state by the Coast and Inland routes.

Incorporated cities are also expending large sums in improving streets and creating boulevards. The city of Los Angeles has voted special assessments in the years of 1912-13 and 1913-14 of over \$4,000,000 for such improvements. The regular road district work carried on each year by the counties and the improvement and maintenance of streets in cities, also largely increase the expenditure for "Good Roads."

From Jan. 1, 1914, to Jan. 1, 1915, approximately \$6,000,000 was spent in the southern counties for road improvement, exclusive of expenditures under Good Roads bonds, State Highway Commission, private work on bridges. This work was mostly confined to incorporated cities.

Several mountain roads, passing through scenery of remarkable interest, have been completed and others are in progress or contemplation. The Crest Line boulevard following the crest line of the San Bernardino mountains for nearly a hundred miles, connects with the roads from San Bernardino, Redlands, and other towns. The recent completion of the trolley line from Los Angeles brings this mountain region into close contact with the most thickly populated portion of Southern California. The United States is building a National Highway through Tulare County, giving access to Sequoia Park; the State Highway Commission proposed to build 100 miles from Independence, Inyo County, to Bridgeford, Mono County, thus connecting Los Angeles with Tahoe Lake and the Lincoln National Highway, by a road which will pass through the most magnificent scenery of the High Sierras; the Tehachapi Ridge road is a part of the State Highway, connecting Los Angeles and the lower end of the San Joaquin Valley; the road over the Santa Ana Mountains, connecting San Juan Capistrano with Lake Elsinore; the Banning-Idlewild road, through the mountains of San Bernardino and Riverside counties; the Mount Wilson and Topanga Canyon roads in Los Angeles County; the Temecula, Warner's Ranch and Cuyamaca roads through San Diego County, are all scenic routes.

One of the strong attractions of Southern California is its system of good roads, with their varied scenery, ranging from that of the High Sierras and the Crest Line of the Coast Range to the ocean boulevards, and passing through shaded and flowerlined streets, through rich orchards, gardens and fields of the irrigated sections, the rolling mesas and foothills, picturesque valleys and canyons of the wide Coastal Plain and Interior Valley. Many tourists bring their machines with them to enjoy these roads and the overland automobile travel is steadily increasing. According to figures issued by the Los Angeles branch of the State Motor Vehicle Registration office, 71,182 vehicles were registered for the southern counties July, 1915; Los Angeles County leading with 46,447 vehicles.

STEAM LINES—Southern California is at present reached by four transcontinental routes, the Southern

Pacific, with its Central and Western Pacific connections from the North and its "Sunset" line from the South; the Santa Fe and the Salt Lake; while the San Diego and Arizona line, now under construction, will give new connections with the East and South.

The remarkable development in steam lines in this section in the past fifteen years, has been where it might least be expected—in the desert region. The following lines have been constructed to keep pace with the opening up of this barren region to agricultural and mining operations, and to handle the increasing transcontinental tonnage:

S. P., L. A. and S. L. Ry., Daggett to Salt Lake, Utah;
Santa Fe Cut Off, from Bengal to Phoenix, Arizona;
Owens Valley Line, from Mojave to Keeler;
Tonapah and Tidewater, from Ludlow to Goldfield, Nev.;
Santa Fe branches to Searchlight and Randsburg;
S. P. branch to Imperial Valley;
Branches, Tonapah & Tidewater to Death Valley and from Searles to Potash Works on Searles Lake.

INTERURBAN ELECTRIC SYSTEM—While the increase in mileage of steam lines for the last fifteen years has not been great, the development of interurban service has been most striking, Los Angeles now being one of the chief interurban centers of the United States. The rapid growth of population, the increasing area devoted to intensified farming, and the demands of tourist traffic, especially in the Coastal Plain and Great Valley Regions of Southern California, have tended to make interurban lines profitable; and the large development of electric energy due to long distance power lines, and cheap fuel oil, have also been factors in the advance of interurban service.

The Pacific Electric, which controls interurban service in this section, now has over 1000 miles of single track railway in operation, connecting Los Angeles with all of the beach points, and with the cities of San Bernardino, Redlands, Riverside and Corona, and all intermediate points of importance. Many of its lines are double-tracked. The extension of the system to San Diego and Santa Barbara is probable.

PANAMA CANAL—"It is interesting to note that the preliminary estimates of the probable tonnage of coastwise traffic that would use the Panama Canal have been more than realized, after six months of use. The traffic between the two sea-boards of the United States via the new route is handled by 49 vessels, operated by six steamship lines, and fully 1,000,000 tons of cargo have already been carried by the canal between the two seaboard of the United States."—Emory R. Johnson, professor of Transportation and Commerce, University of Pennsylvania, in L. A. Times.

The effect of the opening of the Panama Canal upon Southern California, although undoubtedly altered by the prevalence of war in Europe and in Mexico from what it would have been under normal conditions, has already been marked. Not only has it stimulated the imports and exports—particularly the exports—by providing new markets and better freight rates, but it has created new possibilities for industrial development along every line. The railroads have already lowered their freight rates between the Middle West and the Pacific Coast to meet the competition of water traffic.

"PACIFIC PERIOD—Every part of the Pacific shoreline is now seeing a new development. About 1850, soon after the United States gained a firm foothold on the western ocean, growth began, and is now rapid, not only in the three coast states but in Alaska. Since the Canadian Pacific Railway reached the Pacific, development has gone on by leaps and bounds on the western border of Canada. Ten Latin-American republics with their new life border on the Pacific. On the south and west the story is the same, as shown by New Zealand, Australia, the East Indian islands, and Japan; and on the continental border of Asia, where China is struggling up into industrial and commercial strength, and where Russia, with various vicissitudes, has established herself.

"Into this circuit of nations the Isthmian Canal will open a way for the ships of Europe and eastern America. Such lands as the western United States, Canada, all the Latin-American republics, and Australia will increase in population, while western Europe is approaching its limits. Should China rise to commercial activity, it would

then mean the entrance into trade of a people as numerous as the entire population of Europe, supported by equal or greater natural resources. It may, however, be considered as unsafe to predict, at this stage, whether the Pacific Ocean will take the place of the Atlantic as the theater of the world's greatest trade."—Commercial Geography, Brigham. p. 445.

HARBORS—Southern California now has two fine harbors, Los Angeles and San Diego. The latter is a natural harbor, located on San Diego Bay and improved by the government and by local expenditure. The harbor of Los Angeles has been artificially created by the United States and the City of Los Angeles, working in harmony.

LOS ANGELES HARBOR—"Because of the curvature of the earth, the Port of Los Angeles lies only seventy miles from the Great Circle Route between the Panama Canal and the Orient. This means that not only the shipping passing through the canal and to and from the North Pacific Coast, but also all that commerce using the most direct route to and from the Orient, will pass directly by the door of Los Angeles, and will naturally make it a port of call.

"In addition to that Los Angeles is the first great American port that is reached by shipping passing through the Panama Canal, and it is nearer by rail to most of the intermountain region and the middle west than is any other port. Los Angeles is further east than Reno, Nevada. Thus passengers arriving at Los Angeles Harbor for Salt Lake City can be at their destination by the time they would reach San Francisco if they landed through that port; and the same fact holds relatively true of freight service."—Clarence Matson, in Port of Los Angeles.

This harbor has four important elements for making a modern commercial port: a sheltered anchorage; wharves and docks for safe and easy handling of cargoes; an abundance of level land for warehouses, industrial purposes and rail terminals, and a large and rich territory upon which to draw.

Since it began improving this harbor in 1871, the United States government has expended:

For Outer Harbor.....	\$ 3,215,250
Inner Harbor	2,496,000
City of Los Angeles:	
Bonds, voted 1910.....	3,000,000
Bonds, voted 1913.....	2,500,000
	<hr/>
	\$11,211,250

The city pledged when San Pedro and Wilmington came into the municipality, that the amount expended should reach the sum of \$10,000,000 by 1920.

According to reports of the Harbor Commissioners of the city of Los Angeles there had been completed, July 1st, 1915, 5,575 feet of municipal wharves, including Municipal Dock No. 1, a reinforced concrete pier, 2,520 feet in length, with a steel storage shed containing 180,000 sq. ft. of space. A depth of 35 feet of water enables the largest ocean vessels to dock here. There are also 9,625 feet of wharves operated by railroad companies; 9,000 feet operated by private companies and 6,150 feet by lumber companies.

“As it stands today San Pedro Breakwater is a wall more than two miles long, 198 feet thick at the base, and 62 to 66 feet in height the greater part of its length and 20 feet wide at the top.” (Report of Board of Harbor Commissioners.) A lighthouse of 70 feet in height above the water, with a flashing light of 140,000 candle power, marks the entrance to the Port, at the outer end of the breakwater. There is a harbor frontage of approximately 20 miles, with the possibility of nearly half as much again additional, all of which is either controlled by the City of Los Angeles, or will be so controlled when present franchises expire.

The results of the improvement of Los Angeles Harbor cannot fail to be far reaching in effect. Of the actual results obtained by the improvements to the harbor of Galveston, begun in 1890, N. H. Darton, geologist of the U. S. Bureau of Mines, says in an article on Texas, in December, 1913, *Geographic Magazine*: “Applied to present business, it aggregates a difference of 30 million dollars a year, not to mention the great business given to the city by the natural increase due to this great advantage.”

That the improvement of the harbor and the opening of the Panama Canal have already had an effect upon the business of this port is evidenced by the figures shown below.

PORT OF LOS ANGELES

Fiscal year ending June 30th.

	Vessels	Net Tonnage	Freight Tonnage
1911-12	2955	2,453,300	1,867,095
1912-13	3009	2,760,039	1,904,168
1913-14	3919	2,759,274	1,682,794
1914-15	2643	3,626,250	1,739,528

(Harbor Commissioner's Report)

DISTRICT OF SOUTHERN CALIFORNIA

(Includes Ports of Los Angeles and San Diego; Calexico, Campo and Tia Juana, on Mexican Border.)

	Imports	Exports	Collections
1913-1914	\$4,900,543	\$1,972,100	\$897,619
1914-1915	4,738,675	2,540,546	615,691

(Collector's Report)

SAN DIEGO HARBOR—"I am satisfied that the opening of the Panama Canal is going to mean a decided profit-worth to certain cities on the Pacific and Gulf Coasts, and when I say to you that I believe San Diego will realize a greater profit proportionately than any other Pacific Coast city, I am saying no more than I have said by letter and would gladly say on the platform to any other city of the Pacific Coast."—J. LeRoy Tope, Industrial Expert, in "Greater San Diego."

The Bay of San Diego contains twenty-two square miles and is landlocked, with a depth of 35 feet of water over the bar at low tide. By Act of the State Legislature, May, 1911, the City of San Diego, was given control of its water front and the tidelands adjacent thereto, in consideration of the expenditure of \$1,000,000 upon improvements, within three years. In compliance with this Act, a concrete pier 800 feet in length and 130 feet wide, and 2,675 feet of bulkhead have been constructed. The city has also come into possession of 1460 acres of tidelands, giving a harbor frontage of about eleven miles.

The United States Government has appropriated for the improvement of this harbor, since 1876, up to June 30, 1914, \$1,000,000. (Report Chief of Engineers, U. S. A., 1914.) The government maintains an Aviation Station and Fort Rosecrans on this harbor.

VII. CHIEF CITIES

LOS ANGELES. Population, 1910, 319,198. Census Bureau Est. 1914, 438,914.

Los Angeles is the metropolis and industrial center of Southern California and the second largest city on the coast of the two Americas. The economic reasons for its past and its future growth are:

1. It has a large tributary territory capable, as has been shown, of great agricultural, mineral and industrial development.

2. Point of Break. Products shipped to and from this tributary region will be loaded and unloaded at the ports of Los Angeles, or San Diego.

3. Intersection of Axis of Trade. A line drawn from San Bernardino to Santa Monica (the main axis of the Interior Valley), intercepts a line drawn from San Fernando to San Diego at Los Angeles. All products from the east and south shipped north by railroad pass through Los Angeles, at the neck of the San Fernando Valley.

4. Developments due to the Hand of Man.

a. The Los Angeles Aqueduct. It is said that the commercial supremacy of New York City dates from the completion of the Erie Canal. The commercial awakening of Los Angeles may be considered to have begun with the construction of the Aqueduct, in that it:

Provided a sufficient supply of water for a great population; in addition to assuring a domestic supply of water, it provided irrigation water for enough additional land to more than double the agricultural productions of Los Angeles County.

Was a great stimulus to building, as shown by records; called attention to the need of harbor development, and advertised the city over the world.

Was the means of securing a new railway connection with the East, via the Owens Valley Line.

Will provide cheap electricity for all civic purposes.

Has provided means of access—and called attention—to the great natural park in close proximity to the city, the "High Sierra Region" which includes Mt. Whitney, highest peak in the United States, and many other peaks and points of great scenic beauty and interest.

b. The Los Angeles Harbor, the development of which from an open port of call to a sheltered harbor, provided with every facility for world commerce, has been largely due to the enterprise of citizens of Los Angeles.

c. The opening of the Panama Canal, which has brought the Atlantic seaboard and the countries of Europe into direct water communication with the Pacific Coast.

d. As a railway center, Los Angeles is the western terminus of the San Pedro, Los Angeles and Salt Lake Route, San Pedro being now included in the municipality of Los Angeles. The Southern route of the Southern Pacific, via El Paso; its Coast and Inland routes to the North and its Owens Valley connection to the East; and the Santa Fe System, with its many ramifications, bring Los Angeles into direct communication with all sections of California, of the Eastern States, and with large portions of Mexico.

e. The Development of Irrigation. The water resources of the country have been greatly increased through discovery of new sources of supply, systematic conservation of supply and the application of scientific methods of storing and use. Production has been increased through the use of new methods of application, careful study of adaptation of crops and generally improved agricultural standards.

f. Development of Manufacturing. With an abundant supply of oil, furnishing cheap fuel; with an increasing supply of available raw material; with a rapidly increasing market, at home and abroad for manufactured products; and with the new facilities for reaching those markets, the industrial development of this city has already begun.

g. Desirability as a Residential City. A large factor in the growth of this city will always be the climate, which makes outdoor life possible and pleasant, at all seasons; its location between the mountains and the sea, giving easy access to both, and advantages of climate not found on the coast or in the interior. The attractiveness of streets, parks, good roads; the central location with regard to resorts and amusement places; the unusual educational facilities afforded by public and private schools, libraries

and institutions, all attract tourists and permanent residents.

h. The Los Angeles Chamber of Commerce has been an important factor in the progress of the city, through its thorough organization, its efficient service and its constant vigilance and energy in utilizing every opportunity to advance the interests of the community.

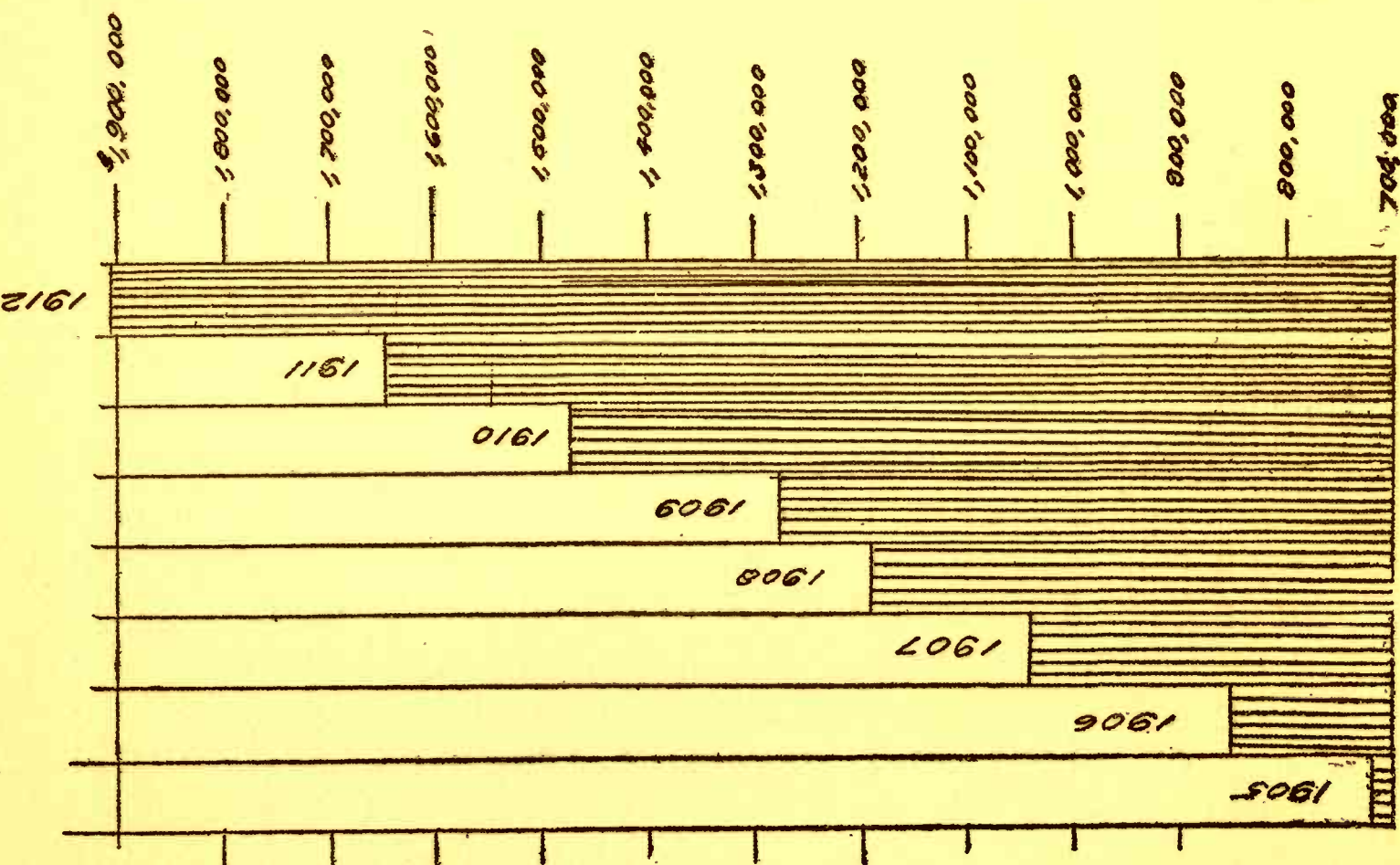


DIAGRAM NO. 1. SHOWING INCREASE IN POSTAL BUSINESS, LOS ANGELES, FOR PERIOD 1905-1912

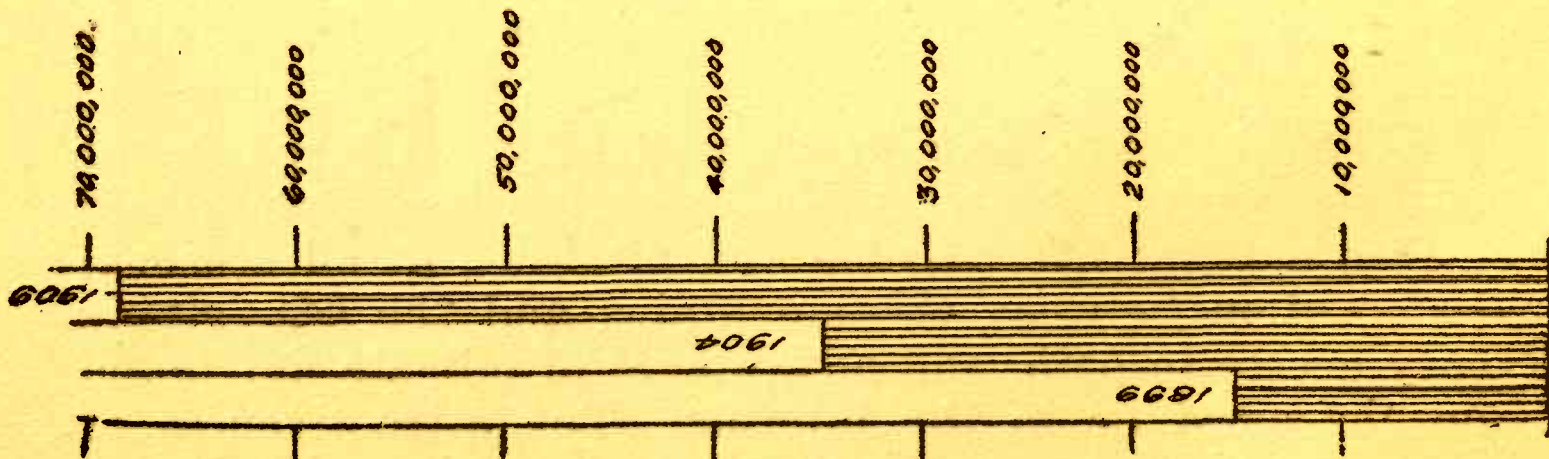


DIAGRAM NO. 2. SHOWING VALUE OF MANUFACTURED PRODUCTS, LOS ANGELES, FOR PERIOD 1899-1910

Note: Unshaded portion of column represents population for 1880; shaded portion is increase during period 1880-1910.

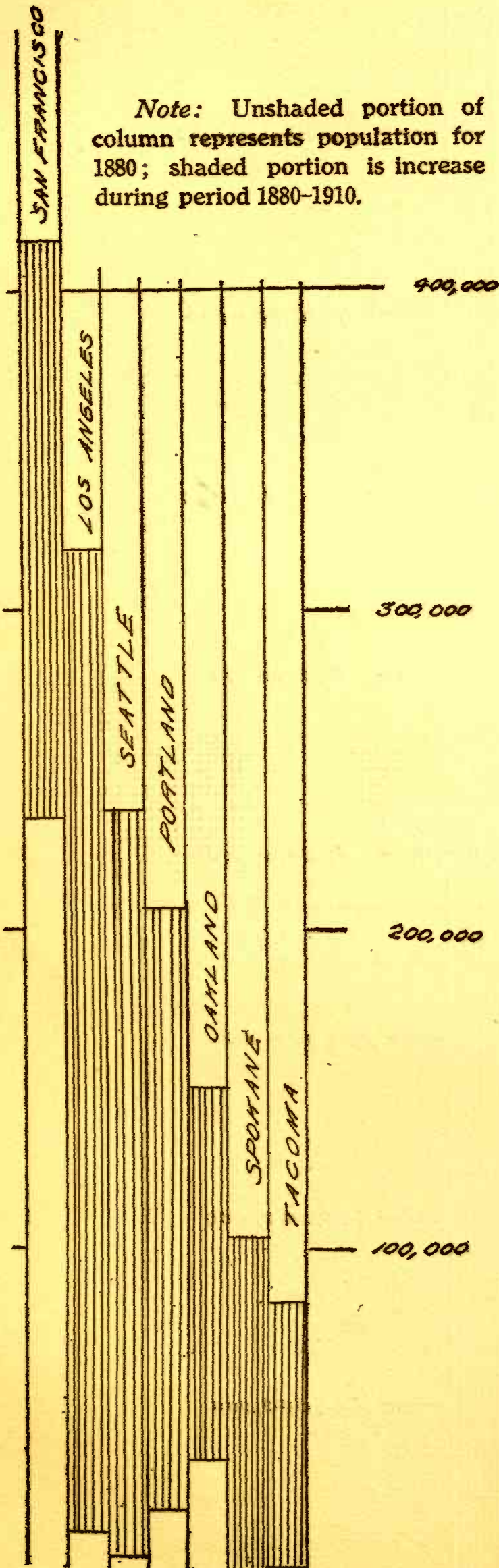


DIAGRAM NO. 3
SHOWING RELATIVE GROWTH
OF LOS ANGELES AND PRINCIPAL
"WEST COAST CITIES" FOR
PERIOD 1880-1910

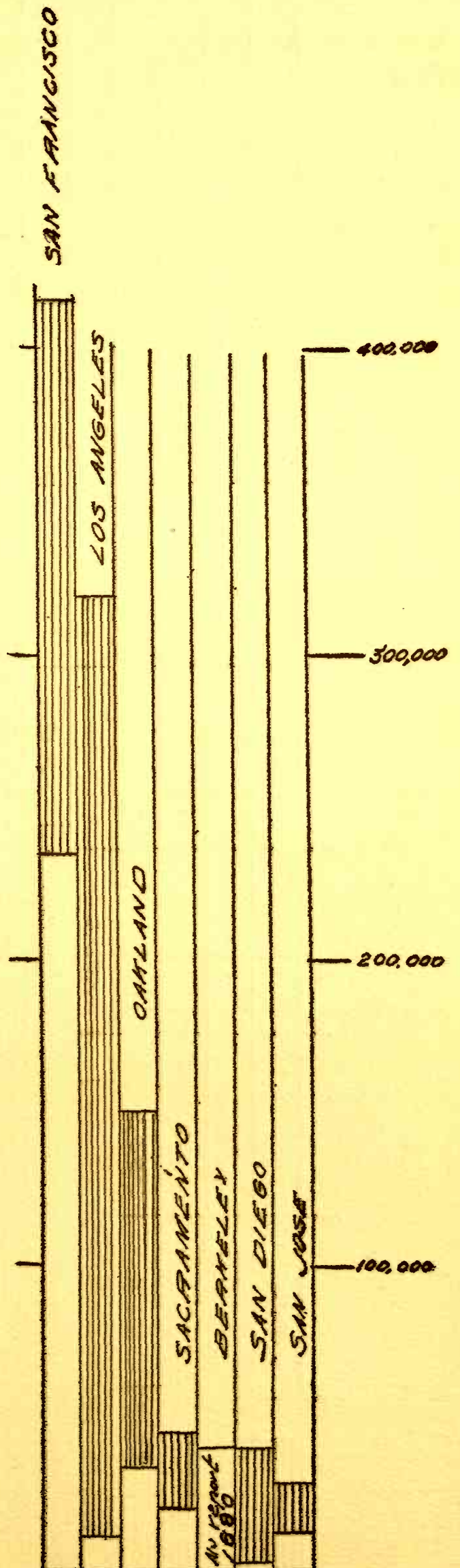


DIAGRAM NO. 4
SHOWING RELATIVE GROWTH
OF LOS ANGELES AND THAT OF
PRINCIPAL CITIES OF CALIFORNIA

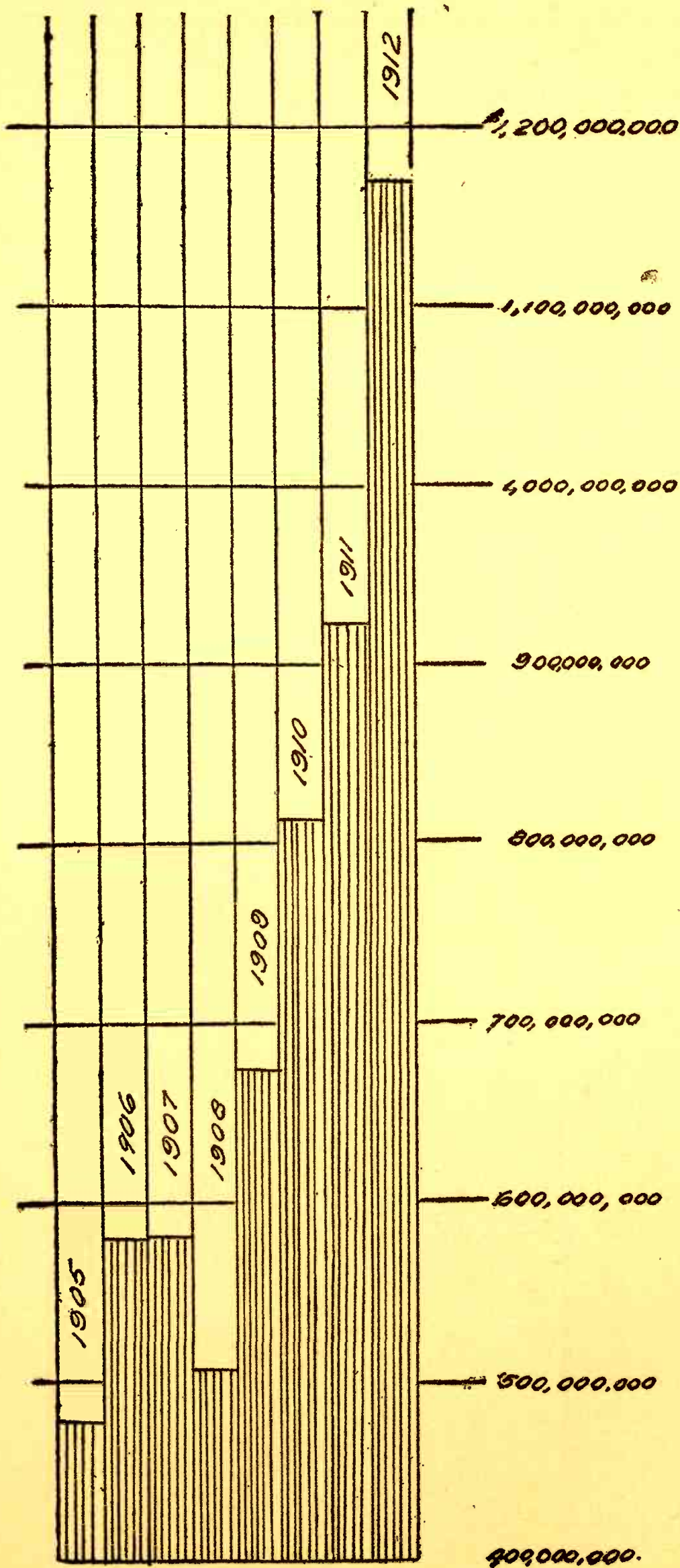


DIAGRAM NO. 5. SHOWING INCREASE IN BANK CLEARANCES, LOS ANGELES, FOR PERIOD 1905-1912

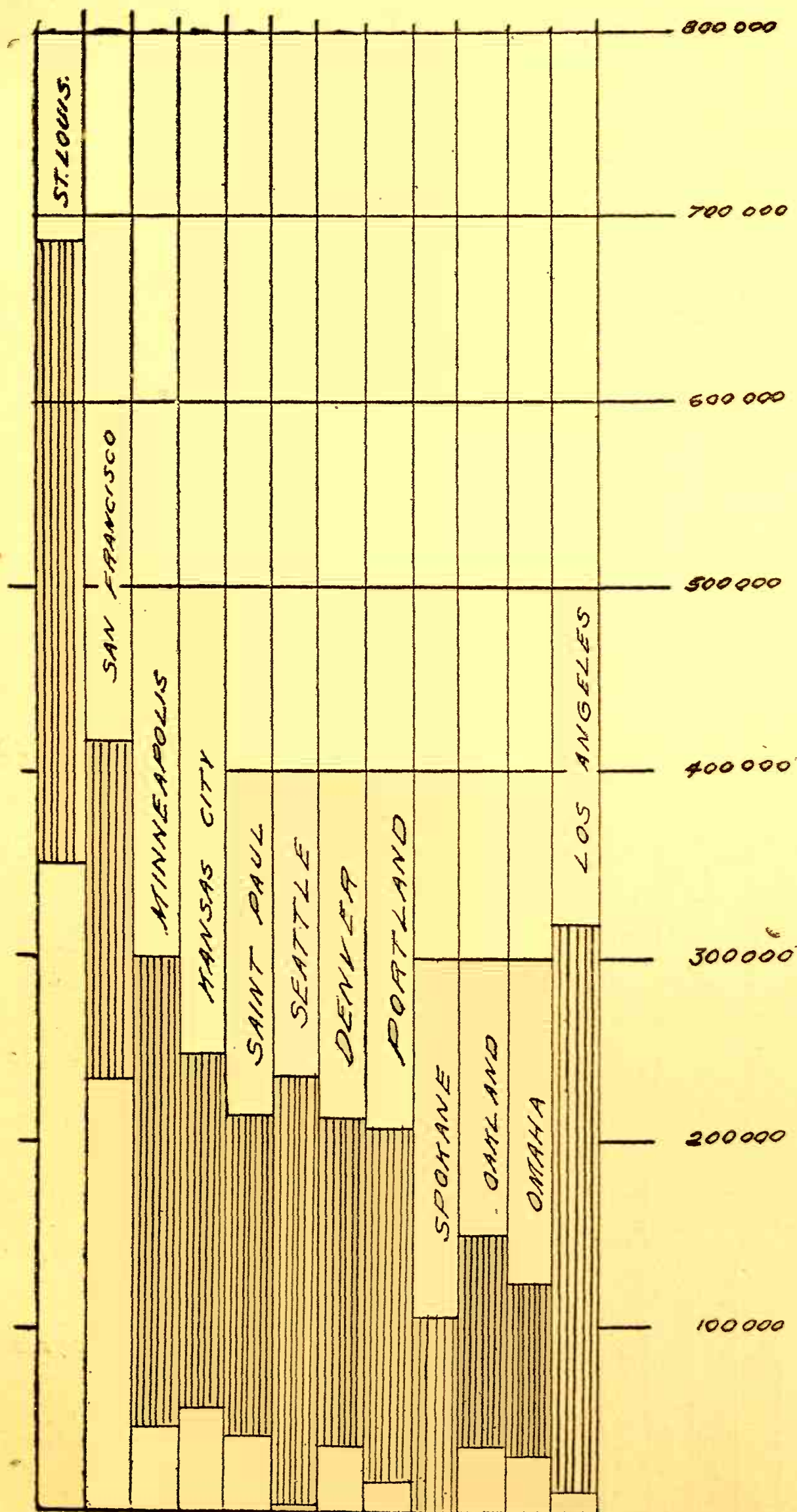


DIAGRAM NO. 6. SHOWING INCREASE IN POPULATION OF PRINCIPAL CITIES WEST OF MISSISSIPPI RIVER FOR THE PERIOD 1880-1910

Note: The unshaded portion of column is population for 1880; the shaded portion shows increase between 1880 and 1910.

DIAGRAM NO. 8
VALUE OF NEW BUILDINGS,
LOS ANGELES 1900-1914

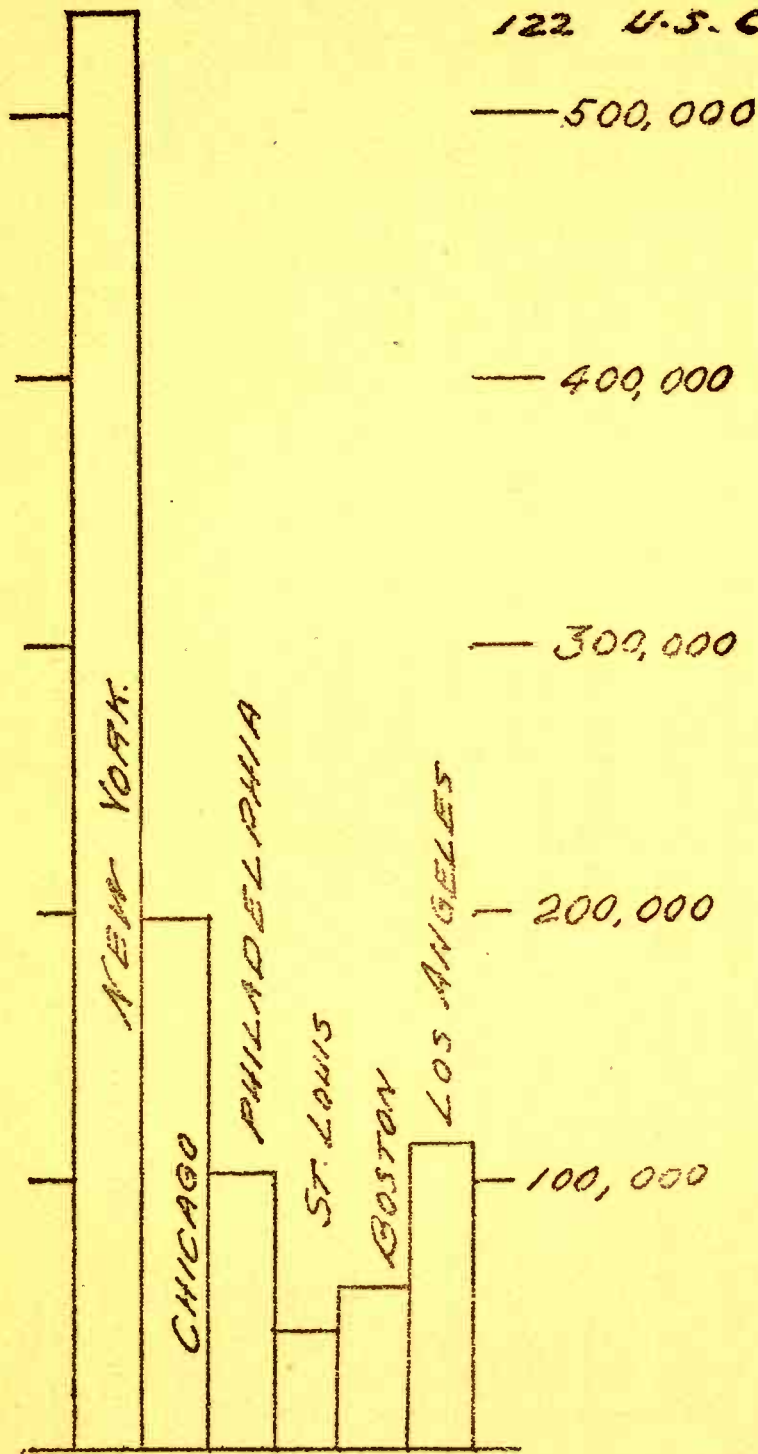
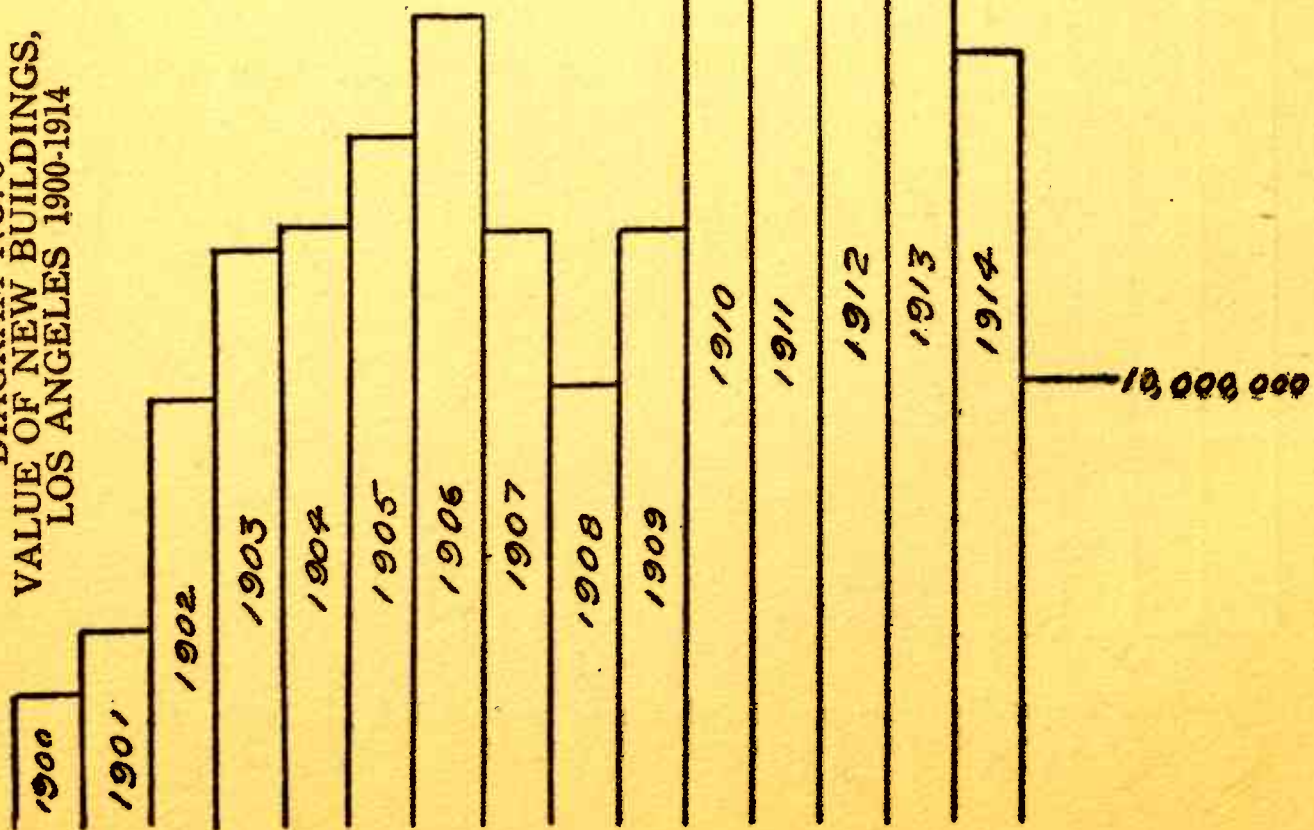


DIAGRAM NO. 7
COMPARING INCREASE IN POPULA-
TION OF LOS ANGELES WITH FIVE
CHIEF CITIES OF UNITED STATES, FOR
PERIOD JULY 1, 1910 TO JULY 1, 1914

Figures for increase from Bulletin 122,
U. S. Census Bureau.

122 U.S. CENSUS BUREAU.



EL PRADO, EXPOSITION GROUNDS, SAN DIEGO

Courtesy Board of Supervisors

SAN DIEGO. Population, 1910, 39,578. Est. Census Bureau, 1914, 48,900.

San Diego, the second city in Southern California, is situated on the beautiful Bay of San Diego, about 125 miles south of Los Angeles and in the extreme southwestern corner of the United States. That it is destined to become a large and important city may be deduced from the following reasons:

1. Tributary Territory. The present area of irrigated lands in San Diego County can be increased nearly four and a half times, or to an acreage of 87,000.* Assuming the gross value of products on this land as \$75 per acre gives a possible agricultural production of \$6,500,000 annually. Two hundred thousand acres may be dry-farmed and, producing an average of \$15 per acre, gross, will add a valuation of \$3,000,000, making a total for the county alone of \$9,500,000. The Lower Colorado River Valley, Southern Arizona and New Mexico, and the northwest section of Mexico, all with immense undeveloped resources, are also tributary when railroad communication is completed.

2. The city is situated directly on a fine natural harbor, with facilities for handling ocean commerce of all classes, and it is not only the first port of call for Panama Canal traffic in the United States, but is the nearest port for the large and rich territory indicated.

3. The city is reached by one transcontinental route now, and with the completion of the San Diego & Arizona line, nearly 100 miles of which is now constructed, it will have two other transcontinental routes and many connections with all southwest territory.

4. The equable climate makes San Diego a most desirable residence city and attracts a large tourist population, for the accommodation of which there are several large hotels. Nearby resorts of wide fame are Coronado Beach, La Jolla, Point Loma, Ocean Beach and Del Mar.

5. The Panama-California Exposition. The enterprise shown by the city of San Diego in carrying forward, almost unaided, its great Exposition project to a successful conclusion, has given it a world reputation. This Exposi-

*Report California Conservation Commission, 1912, page 327.

tion presents an unsurpassed demonstration of the possibilities of the Southwest, and of the city and county of San Diego. Many of the buildings, together with the fine improvements and the great beauty of Balboa Park will remain as a permanent attraction.

The general increase of business and population shown by the following diagrams, confirm the estimate of a present population of between 75,000 and 100,000.

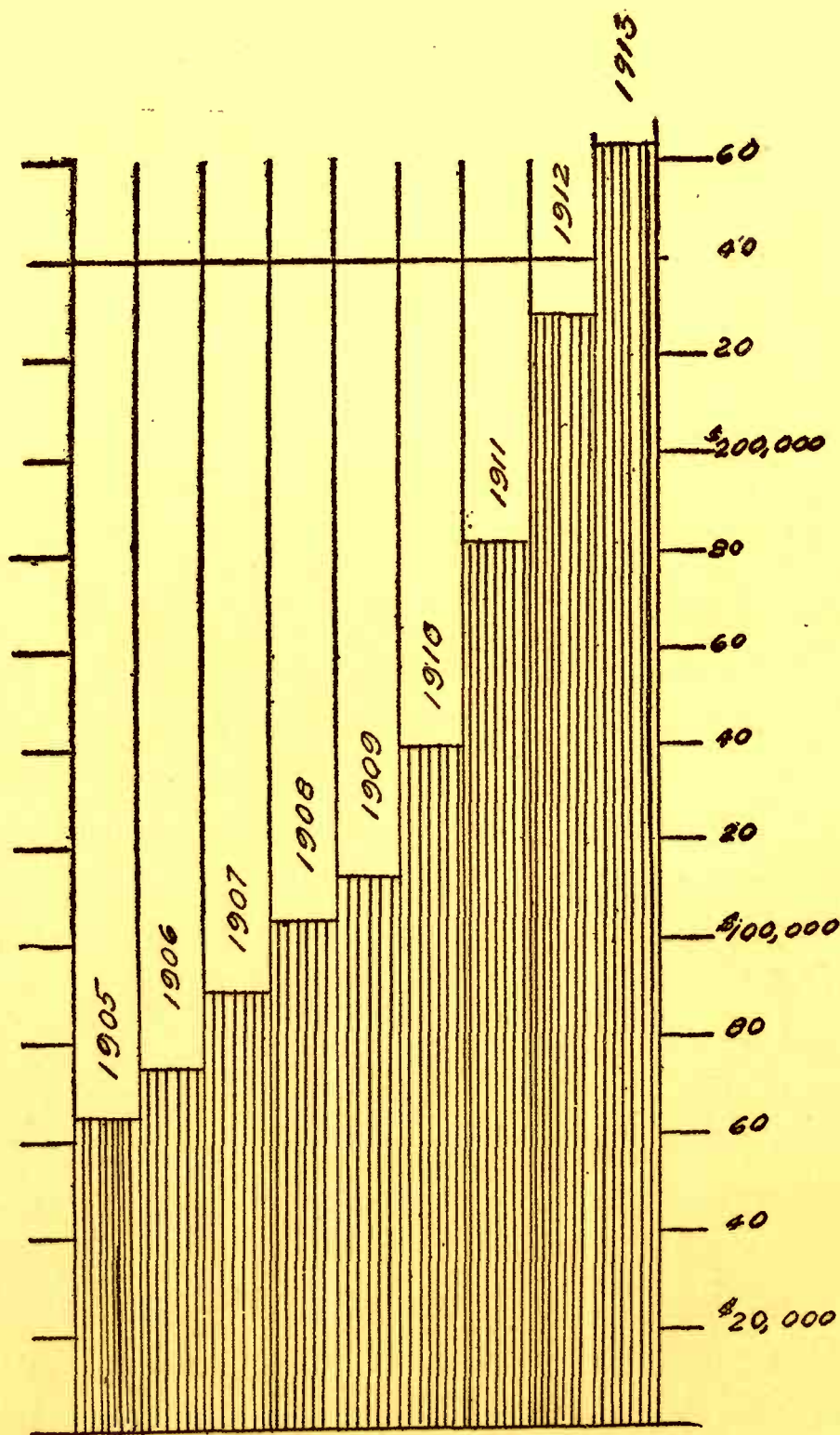


DIAGRAM NO. 9. SHOWING INCREASE IN POSTAL BUSINESS,
SAN DIEGO, FOR PERIOD 1905-1913

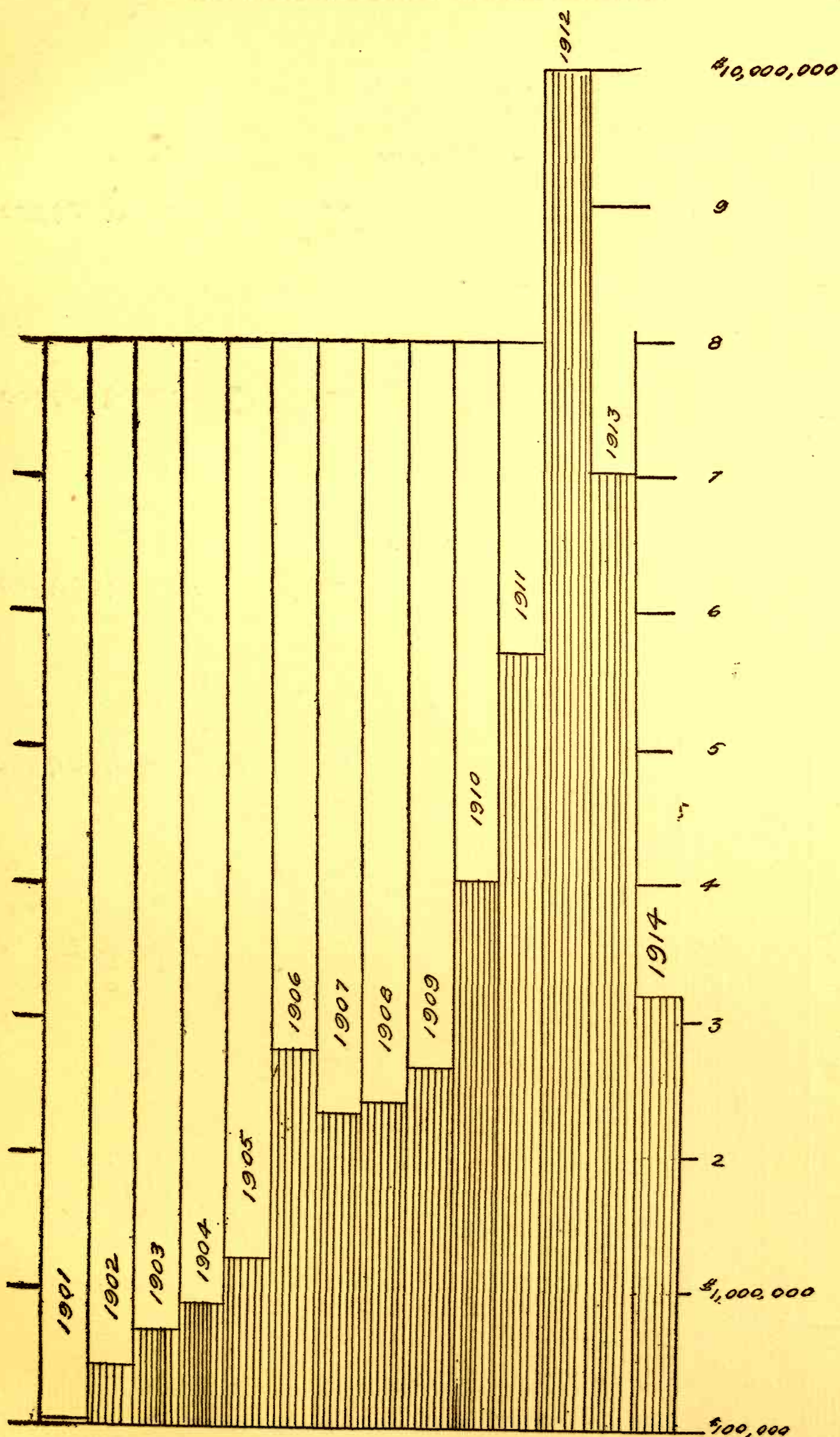


DIAGRAM NO. 10, SHOWING
VALUE OF NEW BUILDINGS, SAN DIEGO 1901-1914

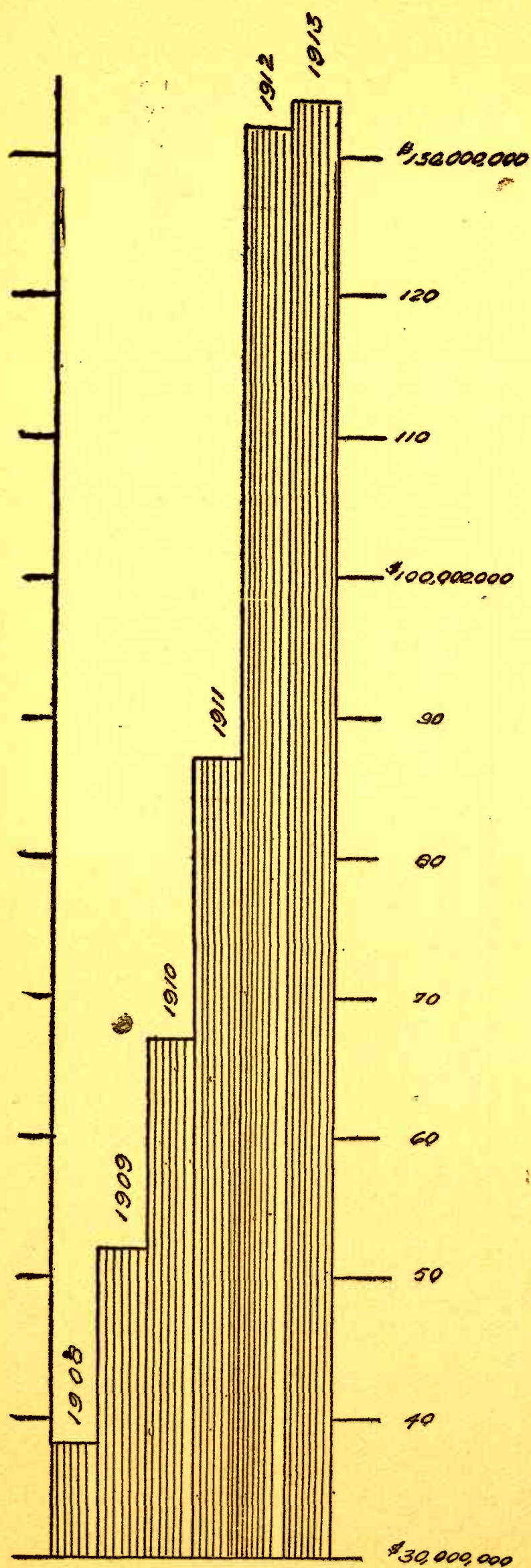


DIAGRAM NO. 11
INCREASE IN BANK CLEARINGS,
SAN DIEGO 1908-1913

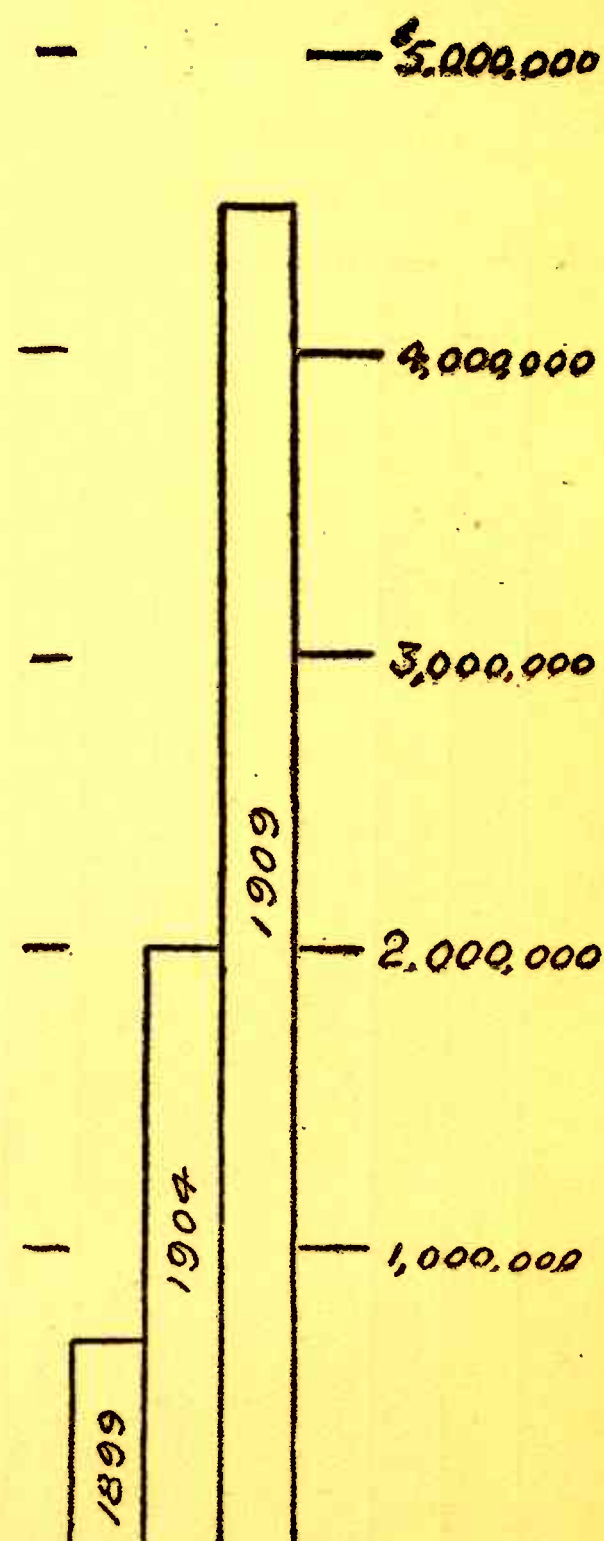
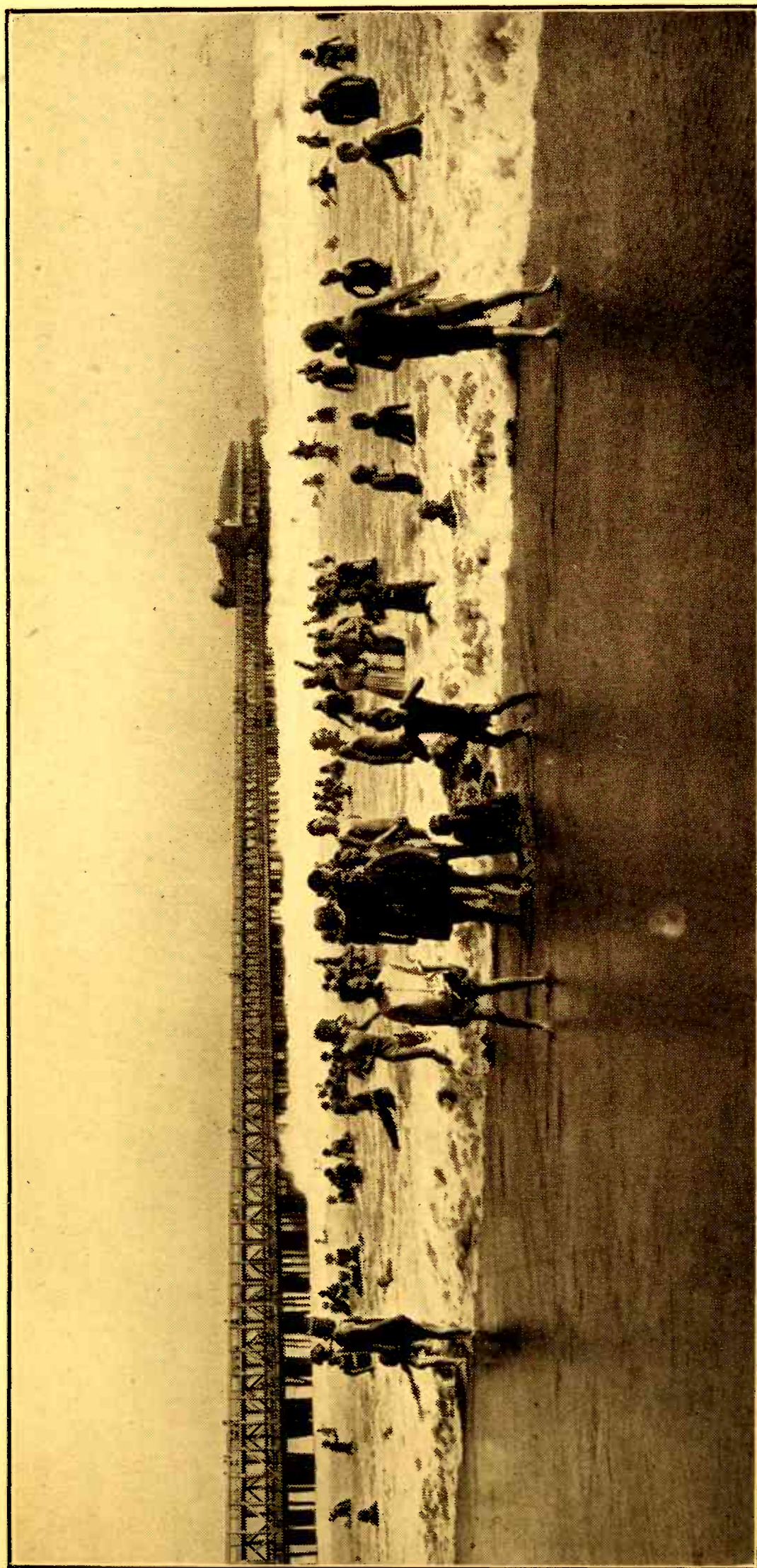


DIAGRAM NO. 12
INCREASE IN VALUES OF OUT-
PUT, MANUFACTURES,
SAN DIEGO, 1899-1904

Data From Census Reports



PIER, LONG BEACH

Courtesy S. P., L. A. & S. L. Ry.

PASADENA. Population, 1910, 30,291. Est. Census Bureau, 1914, 40,880.

The third city of Southern California is situated on an oak-dotted mesa bench, near the foot of the Sierra Nevada Mountains, with fine outlooks over the surrounding country.

Its situation, its scenery and its salubrious climate have made it the location for the Raymond, Maryland, Green and Huntington Hotels, all of which cater to the highest class of tourist trade. It has also become one of the most beautiful residence cities in the country, with many palatial homes, and is the winter residence of many wealthy eastern people.

As Los Angeles is only twelve miles distant, with excellent electric service, and fine paved roads between the two places, it is also a suburban residence section for that city.

The Mount Lowe Railway, the Carnegie Observatory on Mt. Wilson, and many mountain canyons and trails nearby add to its attractions. Altadena, San Rafael Heights and Lamanda Park are suburbs, and South Pasadena and Alhambra adjoining towns.

LONG BEACH. Population, 1910, 17,809. Est. Census Bureau, 1914, 24,437—This city lies on a gently sloping mesa, rising from the ocean and overlooking San Pedro Bay. Growth has been remarkable, since it combines the attractions of a beach resort and a residence place with unusual facilities in a business way, and already has a considerable manufacturing district, lying along the lowlands bordering the bay. The opening of a channel that will connect with the east basin of Los Angeles Harbor will give this district shipping facilities. Here is located the Craig Shipbuilding and other industrial plants.

There are many hotels and apartment houses, and the Virginia is one of the large tourist hotels of the south. A large number of eastern visitors spend the winters regularly in Long Beach. The amusement features are numerous and include a municipal pier and auditorium, fine parks and fishing facilities. Electric lines and two steam lines give frequent service to Los Angeles and neighboring towns, also to the Port of Los Angeles. Long Beach-Los Angeles boulevard, twenty-two miles long, is one of the finest roads in the state.

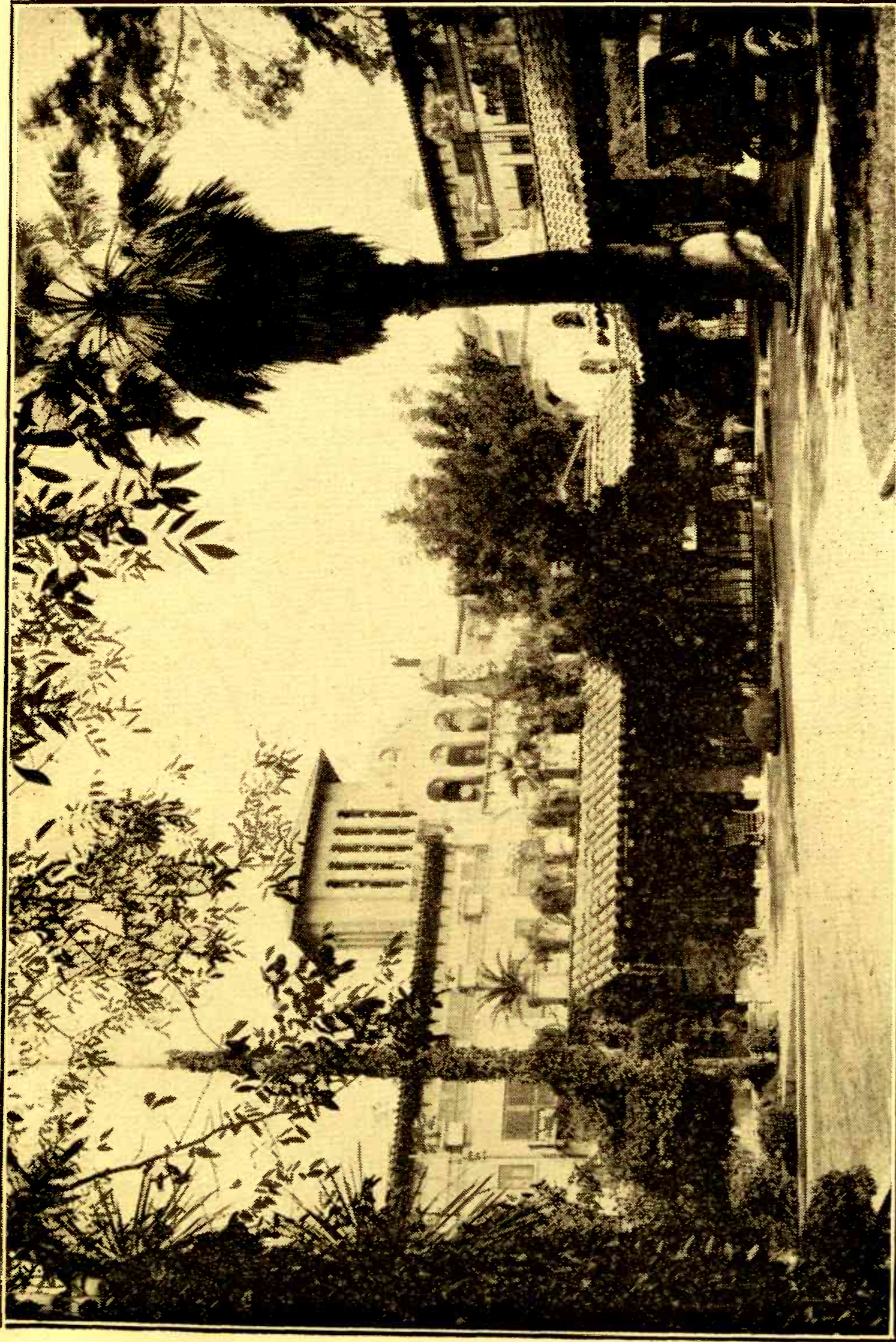
RIVERSIDE. Population, 1910, 15,212; Census Bureau Est., 1914, 18,297, is located on a mesa bench, running parallel with the Santa Ana river, near the eastern end of the San Bernardino Valley.

Including the tributary sections of Corona and the San Jacinto Valley, it is the center of one of the largest bodies of irrigated land in the state, a fact which insures its continued growth. The mesa and valley lie between ranges of rock-studded hills. The range on the south and east is continuous, being formed by the escarpment of the San Jacinto plateau. It has a pleasing variety of forms; in places high conical peaks stand up steeply over the valley; at other points canyons run far back to the summit. The evergreen orange groves have crept up the slopes to the very foot of the peaks and into coves at the mouths of the canyons, and stand in striking contrast to the boulder-strewn ground above. From Rubidoux Mountain, on the opposite side of the valley, the view is varied and extensive, overlooking the cultivated valley, the green Santa Ana river bottom, the high peaks of the Coast Range and, on the south, the saddle-like peak of Santiago, in the Santa Ana Mountains.

Riverside is developing a distinctive civic center and is noted for the attention devoted to its shade trees and streets. It owns its water and lighting systems. It is connected with the surrounding towns of San Bernardino, Redlands, Colton, Arlington, and Corona, and with Los Angeles, by electric lines. Citrus fruit growing is the principle industry; there is also several thousand acres in alfalfa, deciduous fruits and other crops, within the city limits. Glenwood Mission Inn is a tourist hotel of unique interest.

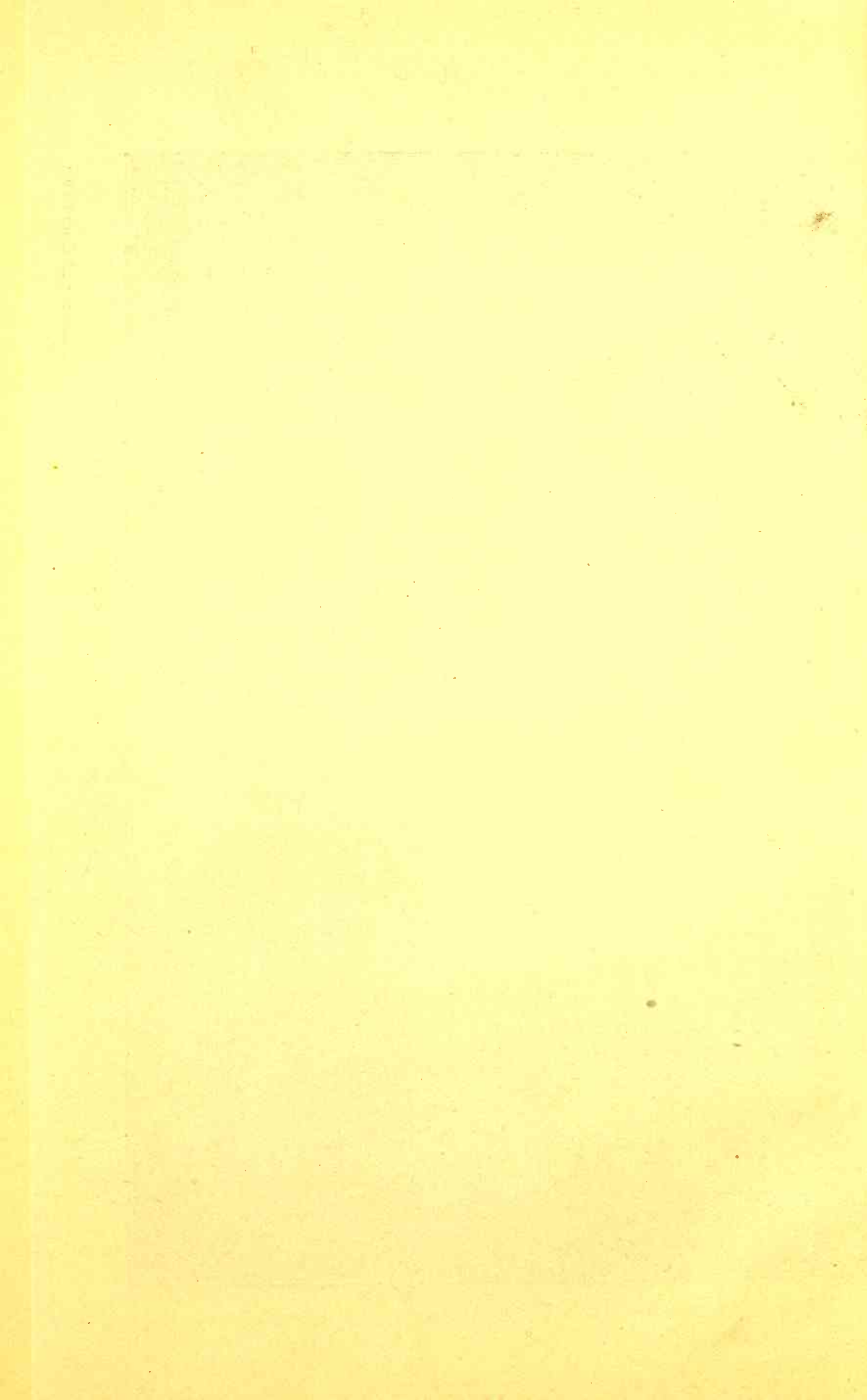
SAN BERNARDINO. Population, 1910, 12,779. Census Bureau Est., 1914, 15,603, county seat, is situated in the eastern end of the San Bernardino Valley, sixty miles east of Los Angeles. Its location at the foot of the only two passes in the Coast Range in the central part of Southern California, makes it a large freight gathering point and the natural location for car shops, cooling plants, and other industries of this section. The city also commands much trade from the desert region.

The city owns a fine water system and is connected with



GLENWOOD INN, RIVERSIDE

Courtesy Chamber of Commerce



all the other valley towns and with Los Angeles by electric line and by its fine system of good roads. Arrowhead and Urbita Springs are in the near vicinity and the many summer resorts of the high mountains nearby are brought close by the new highway known as the "Crest Line." Colton, which adjoins San Bernardino, is also an industrial and railroad center of growing importance.

BAKERSFIELD. Population, 1910, 12,727; Census Bureau Est., 1914, 15,538; the county seat of Kern County and the commercial center of the southern end of the San Joaquin Valley, located 170 miles north of Los Angeles. It is the trading point for a large and rich agricultural area, watered by the Kern river, and in addition the business center for large oil interests, Kern County being by far the largest oil producing county in the state.

It is also a railway center of importance, as it has two transcontinental lines, with a number of branches to the nearby oil fields. Natural gas is available in large quantities for manufacturing purposes and is in use for domestic service. The southern end of the Sierra Nevadas afford an attractive field for recreation. Work is now advancing on the good road system for which the county has voted \$2,500,000, and which will connect Bakersfield with all parts of the county.

SANTA MONICA and VENICE, population, 1910, 11,966, are beach towns lying at the northern edge of the Coastal Plain, with the Santa Monica Mountains as a background. Venice and Ocean Park lie along a wide strip of sandy beach. Santa Monica is marked by its noble palisaded front, rising above a narrow strip of beach. It is one of the oldest of the beach resorts and was laid out with wide streets, set with fine shade trees. The Palisade district, adjoining Santa Monica Canyon and commanding a view of ocean and mountains has been highly improved and contains many beautiful residences.

Ocean Park, as the southern end of the town is generally known, has a wide reputation as a resort, having many amusement features and apartment houses and hotels. Venice is also a popular resort, being within about thirty minutes of Los Angeles, by trolley.

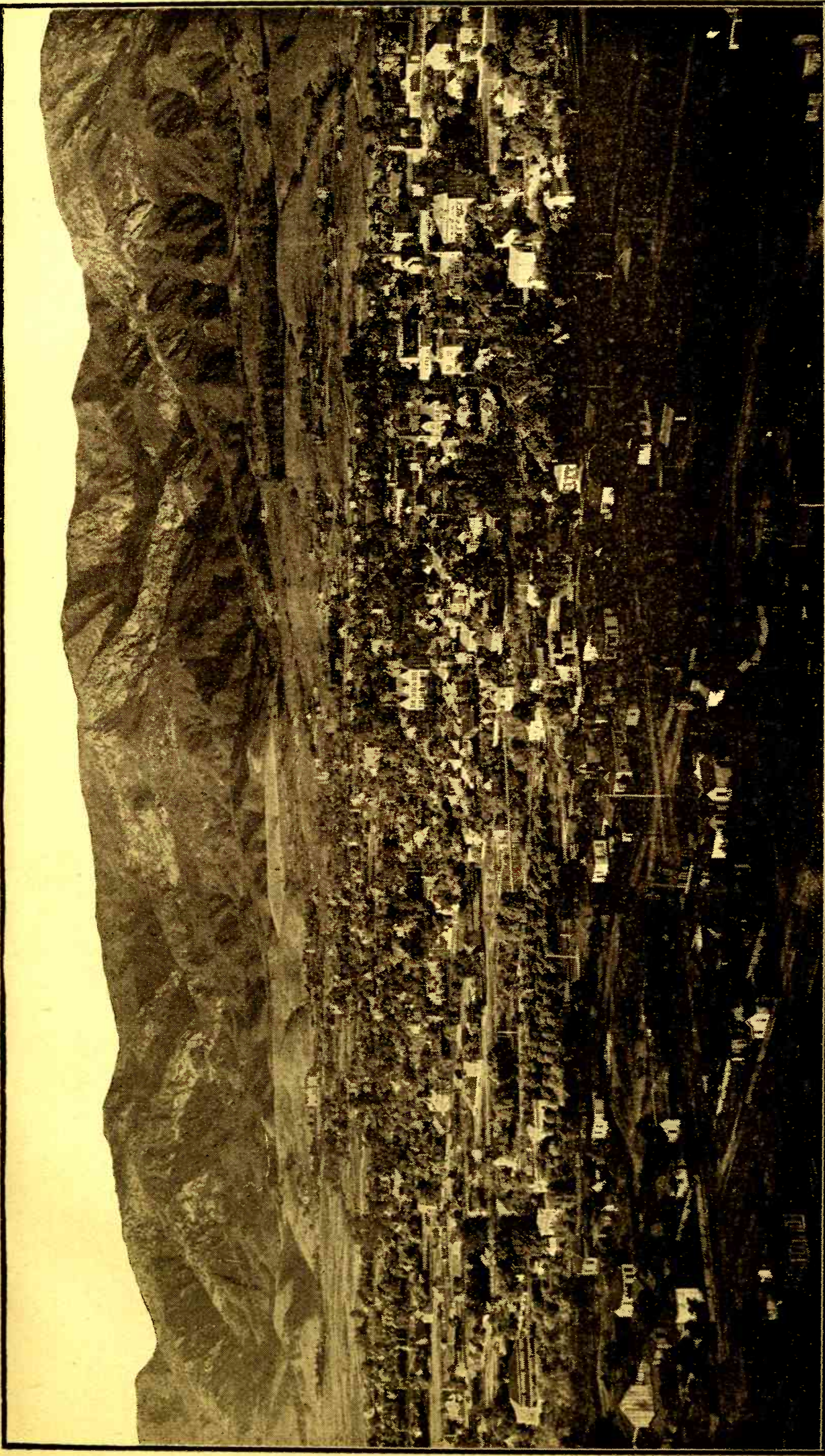
Between this district and Los Angeles lies a fertile farm-

ing country, now largely devoted to the raising of beans. With water from the Los Angeles Aqueduct, this land will become further improved. Brentwood, Westgate, Soldiers' Home, Sawtelle, Beverly Hills, Playa del Rey, Palms, and other suburban districts are closely connected with the Santa Monica territory. Fine boulevards and three different electric routes make all of this section easily reached from Los Angeles and a large number of people live here who are engaged in business in the city.

SANTA BARBARA. Population, 1910, 11,659; Census Bureau, Est., 1914, 13,818; the county seat of Santa Barbara County, located on the north coast of Southern California, 100 miles from Los Angeles. The beauty of the place is due to its situation on the side hill slopes of a small valley, with the Santa Ynez Mountains in the background, overlooking the Santa Barbara Channel. The narrow strip of bench land stretching along the coast for several miles on either side of the town is occupied by beautiful homes. The rainfall being generous, native trees and shrubs grow more profusely than common in the southern end of the state. The city owns an ample water supply, secured by tunneling through the mountains to the Santa Ynez river.

Santa Barbara has two of the largest tourist hotels in Southern California, the Potter and Arlington. It has become the residence of many winter visitors and has many very beautiful and costly homes. Throughout the county are many productive valleys which, though more or less shut off from the city by mountain walls, with good roads, will use it as a trading point.

REDLANDS. Population, 1910, 10,499; Census Bureau Est., 1914, 12,856; is located in the eastern end of San Bernardino Valley, about 70 miles from Los Angeles. It might be known as the "Heights" city, for the high, sloping mesa on which it stands gives it the most commanding position of any of the larger towns of Southern California. Smiley Heights, the once barren crest of a ridge of hills, has been made into a beautiful park, the views from which are grand and impressive. On the one hand the eye travels over a large area of orange groves, and the desolate Santa Ana wash to the highest mountains in the south; on the other hand the view is down a rough, broken



BIRD'S EYE VIEW OF A SECTION OF SANTA BARBARA, CALIFORNIA

POPULATION 17,000

Courtesy Chamber of Commerce

hillside, across the San Timoteo Pass to another broken range of hills.

The city owns its own domestic water system. Water for irrigation comes from Bear Valley reservoir. There are many beautiful homes and highly improved grounds and parks, and the town is a favorite resort for winter tourists. Owing to its location near the foot of Mill Creek and Santa Ana river canyons, Redlands is the starting point for stage lines to the high mountain resorts. The fertile Yucaipa Valley is tributary, as is Oak Glen, famous for its apples. Electric and steam lines connect with San Bernardino, Riverside and Los Angeles.

POMONA. Population, 1910, 10,207; Census Bureau Est., 1914, 12,202; is located near the center of San Bernardino Valley, about thirty miles east of Los Angeles, at an intersection of east and west and north and south trade lines, favorable to its growth as a trade center. It is surrounded by a large area of citrus and deciduous fruit lands. To the south lies Chino Valley, with a large body of moist land devoted to the raising of sugar beets and alfalfa. Two canning establishments and a citrus fruit juice company are located here. Ganesha Park, a wooded spur of the San Jose hill, has been made into an attractive playground, the mountain views being especially fine, as it faces the high ridge of the Sierra Madre Mountains. Claremont, a few miles north, is the home of Pomona College. San Antonio Canyon, leading up to Mt. San Antonio, is an attractive summer resort. The town is traversed by the Pacific Electric, the main lines of the Salt Lake and the Southern Pacific Railways.

SANTA ANA. Population, 1910, 8,429; Census Bureau Est., 1914, 9,919; is the county seat of Orange County, situated near the southern end of the coastal plain, about thirty miles from Los Angeles. The site of the city is near the mouth of the Santa Ana Canyon, this river furnishing water for the irrigation of a large tributary district.

Orange County while small, contains a very fertile area, its productions being more varied, perhaps, than those of any other section of the south. Citrus fruits, walnuts, deciduous fruits, beans, sugar beets, vegetables, and other crops are raised in abundance. There are five sugar beet factories within its limits.

With its neighboring towns of Orange, Fullerton and Anaheim, Santa Ana is an interurban center of considerable importance. It is connected with Los Angeles by both steam and electric lines. The Santa Ana Mountains form an attractive background. The view from Santiago Peak elevation is extensive, overlooking the Coastal Plain, all of the great interior San Bernardino Valley and as far south as Mexico. Santiago and Trabuco Canyons, with their numerous branches, afford attractive fields of exploration. The county of Orange owns an oak-covered area near the mouth of Santiago Canyon. A variety of scenery—mountains, willow-covered bottom lands and a large stream of water, are found between Olive and Prado in the Santa Ana Canyon.

OTHER TOWNS, less than 8000 in 1909. Southern California is justly noted for the number of its attractive towns. Many of these are in the midst of horticultural sections, green all the year round with the beautiful foliage of orange and lemon trees. Others are in fertile valleys where agriculture is carried on. The number of beach towns is constantly growing and each has its own attractions; while the mountains and the desert have their thriving settlements, with all the conveniences and luxuries of modern life.

In the San Joaquin Valley, Hanford, Visalia, Tulare and Porterville are important towns; Santa Maria and Carpinteria, in Santa Barbara County; Ventura, Santa Paula and Oxnard are prosperous rural towns. In Los Angeles County are San Fernando, Monrovia, Azusa, Glendora, Duarte, San Dimas and Lordsburg, in the interior, and a number of suburban towns about Los Angeles. Ontario, Upland, Rialto and Highlands are in San Bernardino Valley; Corona, Hemet, Elsinore, Perris and San Jacinto are thriving towns in Riverside County. Fallbrook, Escondido and National City are in San Diego County. Ocean-side, Huntington Beach and Redondo are business towns as well as beach resorts. On the desert, Barstow, Mojave, Daggett and Needles are chiefly railway towns. Imperial, Brawley, Holtville, El Centro and Calexico are Imperial County towns. Banning, Beaumont and Coachella are in Riverside County.



BROOK
IN
SAN
ANTONIO
CANYON



ORANGES
AND
SNOW
MOUNTAINS



HOME
RANCH
CHINO



RESIDENCE
F. J.
SMITH

COM. ENG.
CO.

VIEWS ABOUT POMONA

Courtesy of Pomona Chamber of Commerce

XIII. TRIBUTARY COUNTRY

As has been shown, Southern California has great possibilities for agricultural development. Yet the region supporting the ports of Los Angeles and San Diego is not confined to Southern California, but includes the whole, or parts, of Nevada, Utah, Colorado, Arizona, Wyoming, New Mexico and the North and West Coast regions of Mexico.

It is estimated by Newell (Irrigation, p. 55), "that the states of Arizona, Nevada, Utah, Wyoming, New Mexico and Colorado contain a total of 29,000,000 acres of land for which there is a water supply." While it is not claimed that all of this territory is tributary to Southern California ports, by reason of railway and shipping facilities and location of markets, a large portion of this area comes under the sphere of influence of our ports.

Speaking of these tributary states, Newell (Irrigation, p. 302), in comparing Holland, Belgium, France and Portugal with California and Nevada; Spain with Arizona and Utah; Germany with Wyoming and Colorado, and Italy with New Mexico—these areas being comparable, says: "Having in mind the great difference in population, we cannot fail to be impressed with the opportunities for increase of population and industries, especially as the resources of these Western states are of great extent and have hardly yet been exploited. There is apparently no reason why our Western states should not, in the distant future, be capable of furnishing homes and profitable occupation for as large a population as some of the countries whose names are placed across them" (In the diagram).

Average value per acre of crops grown on irrigated land in the United States as a whole, from census of 1910:

Crops	Value Per Acre
Tropical and sub-Tropical fruits.....	\$154.00
Orchard fruits and grapes.....	77.00
Potatoes	60.00
Sugar Beets	57.00
Wheat	23.00
Alfalfa	23.00
Oats	19.00
Barley	18.00
Corn	18.00
Grains, cut green.....	14.00

The following description of the Spanish Plateau Region, taken from Chisholm's *Commercial Geography*, 4th ed., p. 329: "The areas belonging to the tableland represented as having the scantiest population are mainly areas of extreme drouth and heat—poverty-stricken steppes, in many places covered with barren soil and having little other vegetation than the scanty sprinkling of pale green grasses, herbs and shrubs characteristic of such a soil," seems applicable to the deserts of California, Arizona and Nevada. Yet Spain, according to the *Statesman's Year Book* for 1914, has nowhere a population density of less than 38 per square mile.

According to Widstoe (*Dry Farming*, J. K. Widstoe) dry farming can be practiced over a large part of the area of these states. He gives the following rules, page 22: "There need be no failures where rainfall is over 15 inches; but few failures where it is between 10 and 15 inches—not safe where it is under 10 inches." Rainfall maps over all this region, except Nevada, and about one-half of Arizona and Utah, show between 10 and 20 inches. He estimates 45% of arid region of the Southwest can be reclaimed.

The area of the plateau region of Spain is about 110,000 square miles, with a population of approximately 7,000,000, and a rainfall of 10 to 20 inches. A large part of Russia, including a portion of the great grain region of that country, has a rainfall of from 10 to 20 inches. Parts of Turkestan, with a rainfall of from 6 to 10 inches, produce large crops of wheat. (Compiled from data in *Statesman's Year Book*, 1914 and *Enc. Brittanica*, 14th ed., *Commercial Geography*, Chisholm, *Year Book U. S. Department of Agriculture*, 1914.)

Newell says with reference to dry farming in Western states: "There is reason to hope that with the activity in searching for new and valuable plants, and the numerous experiments being made, the extent of cultivable lands can be greatly increased on the areas of good soil for which water cannot be had."

ARIZONA—Assuming one-half of land for which there is a possible water supply to be irrigated, and a gross value of products from irrigated land of \$75 per acre (the climate being suitable for the production of sub-tropical

fruits, berries, winter vegetables and nursery products, the value is placed high) the gross value of the products would be \$75,000,000.

Assuming that one-tenth of area, exclusive of irrigated, forest, desert and woodland, is reclaimed with some degree of success by dry farming and produces a gross value of \$10 per acre, the possible value of products from dry farming will be \$37,000,000, making a possible yearly agricultural production of \$112,000,000.

Cattle raising on the open ranges and lumbering are also important industries. This state has immense mineral resources, also, and is now the leading copper producing state. The production of the principal minerals for 1913 was over \$71,000,000. "In the Hopi Indian Reservation, in northeastern Arizona, there is a wonderful coal field of 2500 square miles, containing an enormous tonnage of coal."—N. H. Darton, National Geographic Magazine, August, 1910, page 664.

	Acres.
Land surface	72,000,000
Grazing area	38,000,000
Woodland area	9,000,000
Forest area	10,000,000
Desert area	15,000,000
Improved area	200,000
Irrigated area	200,000
Water supply for	2,000,000

(From Newell Irrigation, page 55.)

Irrigated lands, acres.....	320,000
Improved land in farms, acres.....	350,000
Value all farm property.....	\$75,000,000
Value chief crops.....	5,500,000
Population	204,000
Area, square miles.....	113,810

(From U. S. Census for 1910.)

Density of population, 1910, 1.8 per square mile. Were density of population one-half that of least densely populated of Spanish Plateau Provinces, the state would support a population of over 2,000,000.

COLORADO—"Colorado has 103,645 square miles of land surface, a little less than the combined area of the six New England states and New York. Its population in

1900 was 539,700, or less than a twentieth of the population of these seven states, but its natural resources are in many respects incomparably greater.' (Newell, Irrigation, p. 329.)

	Acres
Land surface	66,000,000
Grazing lands	40,000,000
Woodlands	14,000,000
Forest	10,000,000
Improved	2,000,000
Water supply for.....	8,000,000

(Newell, Irrigation, page 55.)

Irrigated lands, acres.....	2,800,000
Acreage under irrigation enterprises.....	4,000,000
Improved lands in farms, acres.....	4,300,000
Value of all farm property.....	\$491,000,000
Value of chief crops.....	\$51,000,000

(From U. S. Census for 1910.)

Assuming irrigated area to be one-half of that for which there is a water supply (the above table shows that this acreage was under systems in 1910); with a value of products of \$50 per acre—since much of the irrigated lands are in orchards, melons, potatoes, sugar beets and other products with high values, gives a possible gross valuation of \$200,000,000 for the agricultural productions of irrigable lands. Assuming one-tenth of area, exclusive of irrigated lands, forest and woodland, to be dry farmed, with a gross production of \$15 per acre, gives a possible value of \$57,000,000, and a total of \$257,000,000 for this state.

Census figures for 1910 give products per acre from dry farmed lands in Colorado: Oats, 17 bu.; wheat, 15 bu.; barley, 18 bu.; alfalfa, 1.52 tons; wild hay, 0.84 tons; potatoes, 127 bu.; sugar beets, 6.16 tons.

The population for 1910 was 799,000; density per square mile, 8. Assuming a density of 38, that of the least densely populated portion of the Spanish Plateau Region, this state will support a population of nearly 4,000,000.

Besides its agriculture, this state has large mining, manufacturing, grazing and lumbering interests. The value of principal mineral products for 1913 was over \$54,000,000.

NEVADA—

	Acres
Land surface	70,000,000
Grazing area	42,000,000
Woodland area	6,000,000
Forest	1,000,000
Water supply for.....	2,000,000
Desert	20,000,000

(Newell, Irrigation, page 55.)

Area, 109,824 sq. mi.

Area irrigated, acres	702,000
Acreage under irrigation enterprises.....	841,000
Value of all farm property.....	\$60,000,000
Value chief crops.....	\$5,900,000

(From U. S. Census, 1910.)

Assuming an irrigated area of 1,000,000 acres, and a gross value of \$25 per acre, gives \$25,000,000. As the greater part of Nevada has a rainfall of less than 10 inches, no dry farming is assumed. Throughout Nevada and the other states of this section, there are basins where underground water can be obtained. See U. S. G. S. report on "Groundwater in Southeastern Nevada"—Water Supply Paper 365.

If we assume a population density of 14, the same as that of Persia, a region with like rainfall, this state will support a population of 1,500,000. The population for 1909 was 81,875. During past years the population of this state, depending almost entirely upon mining, has fluctuated greatly. Agriculture has become firmly established, however, in the last fifteen years, and the increase for the decade 1900-1910 was nearly 100%.

This state has great mineral resources, the product of the Comstock Lode alone having been over \$300,000,000 ("Comstock Mining and Miners," by Lord, U. S. G. S., p. 353). The production of principal minerals for 1913 was nearly \$40,000,000.

NEW MEXICO—

	Acres
Land surface	78,000,000
Forest	57,000,000
Grazing	16,000,000
Woodland	4,000,000
Water supply for.....	4,000,000

(Newell, Irrigation, page 55.)

Area, square miles.....	122,523
Population	327,301
Irrigated lands, acres	462,000
Acreage under irrigation enterprises.....	645,000
Improved land in farms, acres.....	1,470,000
Value of all farm property.....	\$159,000,000
Value chief crops	\$8,900,000

(From U. S. Census, 1910.)

Assuming one-half of land for which there is water supply under irrigation and a gross value per acre of \$25, gives a production of \$50,000,000 per year from the irrigated lands. With one-tenth of the area, exclusive of irrigated lands, woodland and forest, dry-farmed and a gross production of \$10 per acre, gives a value of \$56,000,000, making a total possible annual production of \$106,000,000 for agriculture in this state. Assuming a density of population of 25 per square mile (13 less than that of the least densely populated province of the Spanish Plateau Region), the state would support over 3,000,000 people.

Production of principal minerals for 1913 nearly \$18,000,000. "The U. S. Geological Survey estimates that there are nearly 165,000,000,000 tons of coal available in New Mexico."—N. H. Dalton, Nat. Geographical Mag., August, 1910, p. 664.

UTAH—

	Acres
Land surface	52,000,000
Grazing	18,000,000
Woodland	14,000,000
Forest	8,000,000
Desert	10,000,000
Water supply for.....	4,000,000
Irrigated	500,000

(Newell, Irrigation, page 55.)

Area, square miles.....	82,124
Population	373,351
Irrigated lands, acres.....	999,000
Acreage under irrigating enterprises.....	1,250,000
Improved lands, acres.....	1,137,000
Value of all farm property.....	\$151,000,000
Value chief crops.....	\$18,500,000

(U. S. Census, 1910.)

Assuming one-half of area for which there is water supply as irrigated, with a gross value of \$25 per acre for its products, gives a possible crop value of \$50,000,000 per annum in Utah.

The Census figures for 1910 give the following yields per acre for land dry-farmed in this state: Oats, 25 bu.; wheat, 18 bu.; barley, 20 bu.; potatoes, 169 bu.; alfalfa, 1.97 tons; wild grass hay, .46 tons; sugar beets, 14 tons. Assuming one-tenth of area exclusive of irrigated, woodland and forest can be dry-farmed, with gross value of \$15 per acre production, gives \$27,000,000, and total crop value of \$77,000,000. The state also has extensive mining and grazing interests. Production of principal minerals 1913, about \$54,000,000.

With a density of population of 25 per square mile, Utah is capable of supporting a population of over 2,000,000.

WYOMING

	Acres
Land surface	62,000,000
Grazing lands	39,000,000
Woodland	10,000,000
Forest	7,000,000
Desert	5,000,000
Irrigated	500,000
Water supply for.....	9,000,000

(Newell, Irrigation, page 55.)

Area, square miles.....	97,594
Population	145,965
Irrigated lands, acres.....	1,130,000
Under irrigation enterprises now completed, acres	1,640,000
Value of all farm property.....	\$167,000,000
Value chief crops.....	\$10,000,000

Assuming one-third of land for which there is water supply placed under irrigation, with gross value of \$25 per acre, gives a possible production of \$75,000,000. With one-tenth of area, exclusive of irrigated, forest, desert and woodlands, dry-farmed and producing \$10 per acre, we have a possible production of \$37,000,000 and a total for the state of \$112,000,000. With a density of population

of 20 per square mile, the state will support about 2,000,000 people. Value of principal mineral products, 1913, nearly \$14,000,000.

TOTAL—The estimated total valuation for the crops of these six states is thus seen to be \$689,000,000, while they are capable of supporting an estimated population of 14,500,000. Taken together they have an area of about six times that of the Spanish Plateau Region and a present population of less than one-third that of this region. Figures of the U. S. Census for 1910 show that the rate of increase in population for the district including these states was over 61%, while the rate of increase for Continental United States as a whole was 21%, from 1900 to 1910.

According to U. S. G. S. Mineral Resources, 1913, Part 1, the value of the principal mineral products of these six states for 1913 was nearly \$249,000,000.

MEXICO—The nine Pacific states of Mexico, with Sonora and Sinaloa, may be considered as tributary territory also to Southern California ports. These states have a population of approximately 5,000,000 (Mexican Year Book, 1913). On the Pacific coast of Mexico are the ports of Acapulco, Bahia de la Magdalena, Guyamas, La Paz, Manzanillo, Mazatlan, Puerto Angel, Salina Cruz, San Blas, Santa Rosalia, Todos Santo and Tonalá, with a number of other less important ports.

Disturbed as it was by revolutions, the foreign commerce of Mexico for 1912-1913 as given by the Mexican Year Book for that year, shows imports, \$197,772,000; exports, \$300,405,000. The imports for the Pacific Coast ports were \$11,362,240 and the exports, \$17,790,815. The greater part of Mexico's trade is with the United States. According to a book on Mexico, issued by the International Bureau of American Republics, in 1904, "The most important exports from the United States to Mexico were manufactures of iron and steel, machinery, unmanufactured cotton, lumber, manufactured wood, manufactures of cotton, and gunpowder. Mexico's exports to the United States are chiefly textile fibers, especially sisal or henequin, coffee, hides, cattle, lead, copper and tobacco, and in addition to these are large quantities of silver in ore and considerable gold."

The west coast of Mexico is rich in many as yet undeveloped resources. It also exports at the present time coffee, cabinet woods, rubber, sugar, dyestuffs, and medicinal substances. Of Sonora, it is said: "Sonora is classed not only among the richest mineral producing sections of Mexico, but also of the world, the leading products being silver, lead, gold, copper, coal, antimony, iron, cinnabar and graphite." When the San Diego and Arizona line is completed, the port of San Diego will be the most available shipping point for much of the commerce of this rich territory.

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